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Acute Appendicitis

A Twenty-five Year Study*

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▪ THE mortality rate for acute appendicitis, at least in the Peter Bent Brigham Hospital, Boston, with due regard for statistical variations, remains the same as it was twenty-five years ago. And yet think what has happened to technical surgery in twenty-five years. One looks back with some horror on the operative methods observed in 1910. Now these methods of therapy have been entirely changed, and we see generally throughout our country—no country today has better surgery—a perfected form of surgery, one best calculated to simplify the ordeal of the operation and to protect the patient. In spite of this perfection of technique, the mortality rate continues almost the same.

It is already apparent that better surgery is not going to save people from dying of appendicitis. Lowering of the death rate will come only when the mass of our people learn through education that when they have a bellyache, taking a cathartic or waiting may mean a fatal outcome. This is a good thing to discuss.

Doctors are set aside in life from most activities. Under the law we are relieved from serving on juries and excused from certain other civic duties. Doctors as a group work harder than most people and try to utilize every detail that may assist their individual patient. They are courageous and are wont to enter houses of danger and pestilence coolly and with a high purpose in mind. But do we not shirk a general responsibility to the public? We each go our own way, interested in our own patients, always giving them better care as individuals. But in caring for the individual, do we see equally the mass of humanity about us?

The day must come when some voice will arise in our profession, perhaps another P. T. Barnum who can convince the public through silver-tongued oratory that avoidable deaths still occur because the patient is too sick when he reaches the doctor or because the patient has taken some medicine without consulting a doctor. A part of the blame rests with the "corner drug store," where medicines are often peddled to ailing humanity without a proper examination. We need above all in this matter under discussion today to speak to the public as a mass, to educate them in medical matters, and even perhaps to draw up laws to prevent those who are not competent from giving advice to the public. It seems to me that such a move would save more lives than can all the improvements in technical surgery which are to come in the next twenty-five years! I hope the figures I have with me will point out this lesson clearly and that all of you will return home buoyed up with the crusader's spirit.

*Read before the Michigan State Medical Society, Grand Rapids, Michigan, September 17, 1941.

TABLE I. CLASSIFICATION OF ACUTE APPENDICITIS (MICROSCOPIC VERIFICATION)
Peter Bent Brigham Hospital 1913-1940

	Cases	Per Cent
Acute Unruptured Appendicitis	1605	73.2
Acute Perforated Appendicitis	340	15.5
Appendiceal Abscess	247	11.3
Total	2192	100.0

Acute appendicitis still remains the most frequent surgical emergency. During the twenty-eight-year period since the Peter Bent Brigham Hospital first opened its wards, one in every thirty admissions to the surgical service has had an operation for acute appendicitis. During this time in addition to perfected operative technique there have been improvements in diagnosis; great advances in our understanding of pre-operative and postoperative care; parenteral fluid therapy and gastro-intestinal syphonage have come into their own; and more recently new and effective chemotherapeutic agents have made their appearance. Nevertheless, patients still die from acute appendicitis just as they did twenty-eight years ago; and an analysis by five-year periods reveals the rather astonishing fact that for twenty years there has been no significant decline in the mortality rate.

Each of the 2,192 consecutive cases dealt with in this paper had microscopic confirmation of the diagnosis of acute appendicitis, once the appendix was removed. Cases have been rigidly excluded when the microscopic diagnosis was subacute appendicitis, subsiding appendicitis, chronic appendicitis, healed appendicitis, fibrosed appendix, etc., irrespective of the clinical or operative diagnosis. Furthermore, in a few instances, particularly in the early years, a diagnosis of acute appendicitis was made by the pathologist when there was nothing to indicate the condition, either clinically or at operation where the appendectomy may have been purely incidental. All such cases have been excluded. Excluded also are cases of carcinoma or carcinoid of the appendix, and tuberculosis of the appendix, even when associated with a suppurative appendicitis. This series, then, includes only instances of acute appendicitis which satisfy both clinical and pathologic criteria.†

†In perhaps eight or ten of the early cases the specimen was lost or was delivered in an unsatisfactory state to the pathologist; in these cases, as in cases of appendiceal abscess, the operative findings were characteristic.

Classification

Each case has been placed in one of three groups: acute unruptured appendicitis; acute perforated appendicitis; appendiceal abscess. Table I shows the distribution of the cases into the three groups: 73.2 per cent we classified as unruptured, 15.5 per cent as perforated and 11.3 per cent as appendiceal abscess. Many types of classification have been suggested and all classifications of acute appendicitis have limitations. It has long been obvious that the fatalities occur almost exclusively in those patients in whom the disease has spread beyond the appendix itself, and that when peritonitis is generalized the mortality is higher than when it is localized, as in an abscess. Attempts have been made to classify appendicitis according to the degree of existing peritonitis at the time of operation by using such terms as localized peritonitis; spreading peritonitis; early or late rupture; gangrenous appendicitis; etc. Some classifications have taken into account the peritoneal culture. Our classification has had to be both simple and arbitrary because of the many different surgeons of varying experience and descriptive ability who operated in these years and because in the early period bacteriological studies were not carried out. Those cases which we have classified as "perforated" have had a gross perforation accurately described either by the surgeon or by the pathologist. *Instances in which the appendix has been broken or ruptured during removal have been placed with the unruptured group.* Cases designated as "abscess" have had a well-localized collection of pus without much evidence of disease beyond, although in some instances the quantity of pus has not been great and a well-walled-off grossly perforated appendix has been found. All remaining cases have been classified as "acute unruptured."

Even this simple and arbitrary classification is far from ideal. Among the "acute unruptured" there are many cases of severe appendicitis with disease beyond the confines of the appendix and in some instances a generalized peritonitis. Many of these unruptured cases have had a positive peritoneal culture and emphasize that a gross perforation need not exist before organisms traverse the necrotic and devitalized walls of a severely diseased appendix. Most—if not all—of the deaths in the "unruptured" group have occurred in such cases.

TABLE II. MORTALITY RATE IN ACUTE APPENDICITIS
Peter Bent Brigham Hospital 1913-1940

	Cases	Deaths	Mortality
Acute Unruptured Appendicitis	1604†	19	1.2%
Acute Perforated Appendicitis	339†	58	17.1%
Appendiceal Abscess	247	18	7.3%
Total	2192*	97*	4.4%

†One anesthesia death omitted
*Two anesthesia deaths included

Mortality

Table II gives the mortality rates in the three classifications. In 1,604 cases of acute unruptured appendicitis there were nineteen deaths with a mortality of 1.2 per cent. In 330 cases with perforation there were fifty-eight deaths—a mortality of 17.1 per cent. In 247 cases of appendiceal abscess there were eighteen deaths with a mortality of 7.3 per cent. For the entire group of 2,192 cases there were ninety-seven deaths (including two deaths on the operating table) for a mortality of 4.4 per cent.

It is interesting to see how closely these figures correspond to similar figures taken from various leading clinics, Table III. Although the difficulties of classification which have already been mentioned, invalidate to some extent a comparison of figures from different institutions, we have grouped the cases to conform as closely as possible to our criteria. Only one of the authors cited makes any statement regarding pathologic control of the cases. Presumably microscopic study has been carried out in all cases, and yet no special point is made of it. We know that even competent surgeons may be in error in the diagnosis of early acute appendicitis. In our own records there are instances where the surgeon refers in a general way to the appendix as "perforated" and yet the pathologist was unable to find a gross perforation. Unless the surgeon specifically saw the actual perforation, the case must be classified with

TABLE III. MORTALITY RATES IN ACUTE APPENDICITIS
Leading Clinics*

	Microscopic Control	Acute Unruptured Appendicitis		Acute Perforated Appendicitis		Appendiceal Abscess		Total	
		Cases	Mortality	Cases	Mortality	Cases	Mortality	Cases	Mortality
Busch and Spivack New York Beth Israel Hospital 1931–1936	Yes	492	0.4%	52	13.5%	91	6.6%	635	2.4%
Davis and McLaughlin Omaha U. of Neb. Hospital 1932–1938	?	784‡	0.5%	124‡	13.7%	50‡	8.0%	958‡	2.6%
Reid and Montanus Cincinnati Cincinnati Gen. Hosp. 1934–1938	?	583	1.0%	209	17.2%	129	10.1%	921	6.0%
Haggard and Kirtley Nashville Haggard Clinic 1915–1938	?	2007	0.6%	189	24.8%	417	5.8%	2613	3.2%
Stafford and Sprong Baltimore J. H. H. 1931–1939	?	838	0.0%	196	14.2%	283	7.1%	1317	3.6%
Cutler and Hoerr Boston P. B. B. H. 1913–1940	Yes	1604	1.2%	339	17.1%	247	7.3%	2192†	4.4%

*Figures adapted and made comparable to Peter Bent Brigham Hospital statistics.
†Includes two table deaths.
‡Excludes five moribund patients.

TABLE IV. INCIDENCE OF PERFORATION AND ABSCESS IN ACUTE APPENDICITIS (FIVE-YEAR PERIODS)
Peter Bent Brigham Hospital 1913-1940

	Cases	Perforation and Abscess	Per Cent
1913–1920	475	181	38.1
1921–1925	423	107	25.3
1926–1930	402	97	24.1
1931–1935	375	90	24.0
1936–1940	517	112	21.7
Total	2192	587	26.8

In Table IV the serious cases of perforation and abscess are broken down by five-year periods. Although in the first five-year period the figure is significantly high and a downward trend is shown, there is no statistically significant difference among any of the later groups. Since these serious cases represent by and large delay in hospitalization, it is still safe to conclude that further intensive education of both laity and the medical profession will do more to cut the mortality rate than any changes in therapy as yet brought forward.

Table V analyzes the mortality rate over a twenty-eight-year period. It is surprising and disappointing to see that no real improvement is found. There is, as can be seen, a good deal of fluctuation; but no trend is shown and even the greatest differences in the same group are no greater than may be explained by statistical variation. That this is not a reflection upon the progressiveness of the Peter Bent Brigham Hospital is shown by the fact that our mortality rates for the entire 28-year period do not vary greatly from those reported by various clinics during only the past few years. (See Table III)

TABLE V. MORTALITY IN ACUTE APPENDICITIS (FIVE-YEAR PERIODS)
Peter Bent Brigham Hospital, 1913-1940

	Acute Unruptured Appendicitis		Acute Perforated Appendicitis		Appendiceal Abscess		Total	
	Cases	Mortality	Cases	Mortality	Cases	Mortality	Cases	Mortality
1913 – 1920	294	1.4%	97	17.5%	84	6.0%	475	5.5%
1921 – 1925	315	0.3%	55	21.8%	52	7.7%	423	4.3%
1926 – 1930	305	1.3%	56	12.5%	41	2.4%	402	3.0%
1931 – 1935	285	2.1%	50	14.0%	40	10.0%	375	4.5%
1936 – 1940	405	1.0%	81	18.5%	30	13.3%	517	4.6%
Total	1604*	1.2%	339*	17.1%	247	7.3%	2192	4.4%

*One anesthesia death omitted.

the unruptured. Such errors by themselves may account for some apparent differences. The pathologist then is as important in an accurate study of acute appendicitis as he is in a study of cancer.

The trend in each clinic is identical; the reported mortality for all cases varies from 2.4 to 6.0 per cent. In the unruptured group where the greatest discrepancies from lack of pathologic control are likely to occur the mortality ranges from 0 to 1.2 per cent; in the perforated group with peritonitis from 13.5 to 24.8 per cent; and in the group with abscess from 5.8 to 10.1 per cent. In the abscess group the difference between the highest and the lowest reported mortality rate is no greater than may occur in series of this size by statistical chance alone. In the perforated group there are no differences of statistical significance except for the highest figure of 24.8 per cent.

Drainage.—There have been two aspects of the operative treatment of acute appendicitis which have been of special interest to us. These are the effect of the location of the incision, and the desirability of draining the peritoneal cavity.

Chart VI reveals that there is a lower mortality in the cases which have not been drained. Of course it must be pointed out that here a selective

TABLE VI. ACUTE UNRUPTURED APPENDICITIS—OPERATIVE TREATMENT
Peter Bent Brigham Hospital 1913-1940

Incision	Drains	Cases	Deaths	Mortality
McBurney	No	567	3	0.5%
	Yes	88	1	1.1%
Right Rectus, Midline, etc.	No	680	2	0.3%
	Yes	269	13	4.8%

TABLE VII. ACUTE PERFORATED APPENDICITIS—OPERATIVE TREATMENT
Peter Bent Brigham Hospital 1913-1940

Incision	Drains	Cases	Deaths	Mortality
McBurney	No	28	2	7.1%
	Yes	69	11	16.0%
Right Rectus, Midline, etc.	No	16	1	6.3%
	Yes	226	44	19.5%

factor is at work since the most severe cases are the ones drained. But it must also be pointed out that drainage has not prevented an increase in the mortality rate in severe unruptured cases. There is another point of interest in these figures. Here the McBurney incision asserts its superiority, although in subsequent figures it does not enjoy a pronounced advantage since there are not sufficient cases to prove its superiority beyond statistical doubt. But in the acute unruptured group which are drained, the mortality is significantly raised when an incision other than the McBurney incision was employed. Although this is surprising in one sense it is logical in another sense, inasmuch as in the severe, although unruptured, case of appendicitis, one can potentially do more harm through spreading infection than one can in the already frankly perforated appendicitis with a general peritonitis.

Incision.—Table VII analyzes the perforated group in similar fashion and shows that there is no apparent advantage for the McBurney incision. But note the pronounced discrepancy between the mortality rates for the drained and the undrained with any type of incision. Again it must be pointed out that our surgeons, like surgeons everywhere, are inclined to drain the most severe cases. But again the least that may be said is that the cases selected for closure without drainage were wisely chosen. Moreover, when we recall the previous slide showing the effect of drainage in the unruptured group, we are led to conclude that no unperforated case should be drained.

TABLE VIII. APPENDICEAL ABSCESS*—OPERATIVE TREATMENT
Peter Bent Brigham Hospital 1913-1940

Incision	Appendectomy	Cases	Deaths	Mortality
McBurney	No	37	6	16.2%
	Yes	43	1	2.3%
Right Rectus, Midline, etc.	No	31	4	12.9%
	Yes	133	7	5.3%

*Three without operation omitted

TABLE IX. EFFECT OF LOCATION OF INCISION IN ACUTE APPENDICITIS
Peter Bent Brigham Hospital 1913-1940

	McBurney		Right Rectus Midline, etc.	
	Cases	Mortality	Cases	Mortality
Unruptured				
Total	655	0.6%	949	1.6%
Drained	88	1.1%	269	4.8%
Perforated	97	13.4%	242	18.6%
Abscess				
With Appendectomy	43	2.3%	133	5.3%
Drainage only	37	16.2%	31	13.3%

Table VIII gives similar analysis for the abscess group. Appendiceal abscess naturally carries a lower mortality than free perforation. Here also no advantage is shown for the McBurney incision. This is in keeping with the theory that the type of incision is of no importance so long as the general peritoneal cavity is left undisturbed. The higher mortality rate in the group with drainage only is merely a reflection of the more severe type of appendicitis in which either the appendix cannot be conveniently found or local conditions or the condition of the patient make exploration inadvisable. It is our practice to drain all but the very smallest appendiceal abscesses.

Table IX summarizes the effect of the location of the incision upon the mortality rate in the three groups. Although there is a distinct trend favoring the McBurney incision in all groups except the abscess group, it is only in the unruptured drained group that there are sufficient cases to prove it statistically.

TABLE X. MORTALITY IN DRAINED AND UNDRAINED CASES OF ACUTE APPENDICITIS
Peter Bent Brigham Hospital 1913-1940

	Drains	Cases	Mortality
Unruptured	No	1247	0.4%
	Yes	357	3.9%
Perforated	No	44	6.8%
	Yes	295	18.7%

TABLE XI. EFFECT OF INCISION ON LENGTH OF HOSPITALIZATION ACUTE UNRUPTURED APPENDICITIS WITH NEGATIVE PERITONEAL CULTURE
Peter Bent Brigham Hospital 1933-1937

Incision	Drains	Cases	Average Days Postoperative Hospitalization
McBurney	No	148	10.2
Right Rectus, Midline, etc.	No	111	13.1
McBurney	Yes	9	14.6
Right Rectus, Midline, etc.	Yes	10	18.3
Total McBurney		157	10.5
Total Right Rectus, Midline, etc.		121	13.7

TABLE XII. DRAINAGE IN ACUTE UNRUPTURED APPENDICITIS (FIVE-YEAR PERIODS)
Peter Bent Brigham Hospital 1913-1940

	Total	Drained	Per Cent
1913–1920	294	125	42.5
1921–1925	315	115	36.5
1926–1930	305	48	15.7
1931–1935	285	49	17.2
1936–1940	405	20	4.9

Table X summarizes the mortality in drained and undrained cases. Although the quite pronounced differences must be interpreted with caution, it at least suggests that drains perhaps could be used less frequently without jeopardizing the patient's chance for recovery.

Another aspect to be considered in connection with the location of the incision and drainage of the peritoneum is the hospital morbidity. Table XI shows clearly that in the acute unruptured group the undrained McBurney incision imposes upon the patient the shortest hospitalization. It is an additional argument in favor of the lateral approach to the appendix and the more thoughtful use of drains.

The trend toward eliminating drains is plainly demonstrated by Table XII grouping the material in five-year periods. In the period from 1913 to 1920, 42.5 per cent of all cases with acute unruptured appendicitis were drained; from 1936 to 1940 only 4.9 per cent.

Sulfonamide Therapy

Since the more general use of sulfonamide drugs in the treatment of peritonitis has been established for about three years, let us present for your consideration Table XIII, the fatalities from acute appendicitis in this most recent period. During this period the chief sulfonamide drug used by us was sulfanilamide. It was given by hypodermoclysis or by mouth if the patient was not vomiting and usually in dosage varying from 6 to 8 gm. daily. Although we have used sulfanilamide locally in numerous potentially infected appendiceal wounds, we have not made a practice of placing it in the peritoneal cavity, and it was not so used in the cases discussed here. It may be that the intraperitoneal use of these drugs will have a markedly beneficial effect. Some authors, notably the recent report from the Roosevelt Hospital in New York, give encouraging results from this method of treatment. But there is contradictory evidence and the number of cases reported is insufficient to permit a final opinion.

Treatment and Mortality

In the period 1938-1940 there were fourteen deaths. In six of the fourteen some extra-abdominal disease may properly be listed as the primary cause of death; two coronary closure, three pulmonary embolism, one diabetes and pulmonary complications. The two deaths in unruptured cases fall into this group, as do the three which were closed without drainage. In no instance could death be attributed to a failure to drain. Nine of the patients were fifty years old or over. In only two were the symptoms of shorter than forty-eight hours' duration, and in none less than twenty-four hours. Eight had taken cathartics, several at the behest of a physician! Sulfonamide derivatives failed to save four of the eight patients dying of peritonitis or its complications; in

TABLE XIII. DEATHS FROM ACUTE APPENDICITIS

Peter Bent Brigham Hospital, 1938-1940

Cases	Sex	Age	Duration of Symptoms	Catharsis	Type of Appendicitis	Chemo-therapy	Post-operative Survival	Autopsy	Primary Cause of Death	Incision	Drains
M.O.	F	50	3 days	Yes	Unruptured	Late	8 days	Yes	Pulmonary embolism Coronary infarct	RR	Yes
M.C.	F	60	48 hrs.	?	Unruptured	Yes	71 days	Yes	Diabetes Nephritis Pulmonary complications	McB	No
J.B.	M	12	48 hrs.	Yes	Perforated	Late	8 days	Yes	Peritonitis	McB	Yes
J.L.	M	57	24 hrs.	Yes	Perforated	No	5 days	Yes	Peritonitis Septicemia	RR	Yes
N.C.	M	25	5 days	No	Perforated	Yes	2 days	No	Peritonitis Pylephlebitis	McB	Yes
D.J.	F	35	48 hrs.	Yes	Perforated	Yes	16 days	Yes	Peritonitis Obstruction	RR	Yes
M.S.	F	45	36 hrs.	Yes	Perforated	No	6 days	Yes	Pulmonary embolism	McB	Yes
M.C.	F	75	48 hrs.	No	Perforated	No	4 days	Yes	Coronary infarct	McB	No
W.A.	M	63	40 hrs.	Yes	Perforated	No	9 days	No	Pulmonary embolism	McB	No
S.R.	M	67	3 days	No	Perforated	Yes	4 days	Yes	Peritonitis	McB	Yes
B.B.	M	71	7 days	No	Perforated	No	3 days	Yes	Peritonitis	RR (upper)	Yes
C.S.	M	18	7 days	Yes	Abscess	Late	48 days	Yes	Abdominal abscesses Empyema	McB	Yes
T.McE.	M	58	10 days	No	Abscess	Yes	8 days	Yes	Pulmonary embolism	McB	Yes
A.B.	M	69	5 days	Yes	Abscess	Yes	7 days	No	Peritonitis Ileus Pylephlebitis	McB	Yes

the four remaining it was either not tried or tried late in the course of the disease.

What does this teach us? It shows us that the most important factors still remain early diagnosis and avoidance of cathartics. It shows us that oral or parenteral chemotherapy is not yet a panacea. It shows us that extra-abdominal complications may kill our older patients, even after the abdominal disease has been conquered.

Summary

This study of acute appendicitis at the Peter Bent Brigham Hospital from 1913 to 1940 divides all appendicitis into three groups: acute unruptured appendicitis, acute perforated appendicitis, and appendiceal abscess. It is based upon rigid clinical and pathologic criteria. The total mortality for the entire group of 2,192 cases is 4.4 per cent. The mortality in acute unruptured appendicitis is 1.2 per cent; in acute perforated appendicitis 17.1 per cent; in appendiceal abscess 7.3 per cent. The proportion of cases with perforation or abscess is still today greater than 20 per cent; indicating the need of an educational campaign directed toward the public.

An analysis by five-year periods shows no significant improvement in mortality trends in any

of the three groups despite the modern availability of gastro-intestinal syphonage, parenteral fluid therapy and more recently the sulfonamide drugs. A distinct advantage is shown for the McBurney incision, particularly in acute unruptured appendicitis which has been drained. Drains are used far less frequently in recent years, and the low mortality in the undrained cases, both unruptured and perforated, encourages still further restrictions on the indications for drainage. An analysis of the fourteen deaths occurring in the past three years discloses that six died of extra-abdominal complications, that four died of peritonitis despite heavy treatment with sulfonamide drugs and that no death could be attributed to a failure to drain. The fact that all but three of the fourteen had symptoms forty-eight hours or longer before coming to the hospital, and that eight had taken some type of cathartic (several on the advice of a physician!) suggests that the mortality from this disease is still best attacked through earlier diagnosis and treatment rather than through skillful management of the late cases.

We must become Crusaders as well as Physicians and Surgeons!

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The Pathogenesis of Acidosis and Alkalosis*

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■ THE disturbances of body fluid reaction which we call acidosis or alkalosis have been studied quite successfully by the methods of physical chemistry. And so it is quite understandable that the results of these researches have been presented in the language of the physical chemist which, unfortunately for most of us, is largely mathematical. I shall try to substitute morphology for mathematics. As physicians, we are

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accustomed to thinking of disturbance of physiological function in terms of underlying anatomical change. This familiar conception can be quite logically used in discussing the physical chemistry of the blood plasma. The quantities of the chemical substances in the plasma are adjusted in such a way as to provide the necessary stability of the important physical property which we call reaction. It is therefore permissible to regard the chemical composition of the blood plasma as a chemical structure, alteration of which, by processes of disease, will cause a change in reaction. So we can, if we like, speak of the chemical anatomy of the blood plasma.

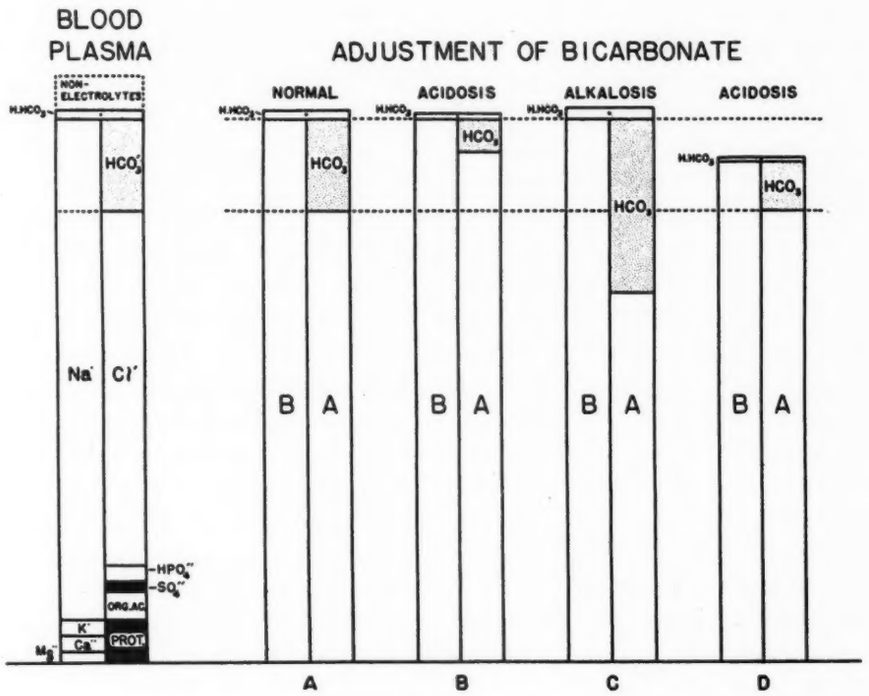


Fig. 1

The reaction of the blood plasma has, as you know, under normal circumstances an almost constant value. In so short a discussion as this we can only undertake to consider some of the main features of the regulatory mechanism which provides stability of reaction. What we might call its proximal part, on which reaction directly rests, is the ratio of the concentrations in the plasma of two substances: carbonic acid and its salt, bicarbonate. Carbonic acid is a weakly acid substance and bicarbonate is weakly alkaline. So it is clear that the reaction of a solution containing both of these substances will be determined by their relative amounts. The ratio which provides the physiologically correct reaction is one part of carbonic acid to twenty parts of bicarbonate. Under normal circumstances this ratio is sustained by the presence in plasma of 3 volumes per cent carbonic acid and 60 volumes per cent bicarbonate. A change in the concentration of carbonic acid or of bicarbonate from their usual values will alter the ratio and so cause a change in plasma reaction.

In order to understand how various conditions of disease cause change in the concentration of carbonic acid or of bicarbonate, we need to know how their normal values are maintained. The concentration of carbonic acid in the plasma rests on respiratory control of the concentration of carbon dioxide in the residual air of the lungs, and so excellent is this control that we do not often encounter an abnormality of reaction in the plasma which is due to an incorrect concentration of carbonic acid. Occasionally, however, this respiratory control is disturbed. An intracranial lesion affecting the respiratory center may cause acidosis or alkalosis. Or, as in emphysema, interference with the mechanics of lung ventilation may cause a change in the concentration of carbonic acid in the residual air with corresponding change in the blood plasma.

By and large, however, the usual cause of

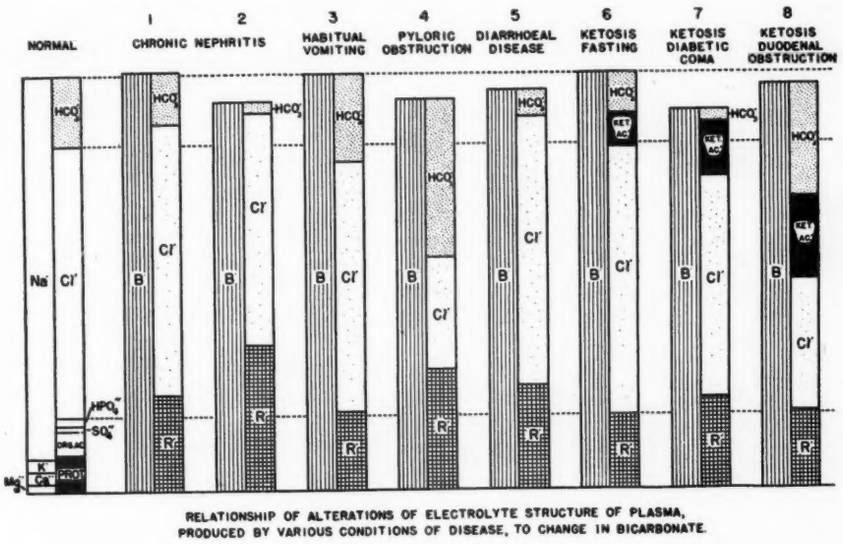
acidosis or alkalosis is change in bicarbonate. The way in which the normal plasma bicarbonate is sustained requires quite a bit of explaining. This I will try to accomplish by what we may call the anatomical method of exposition, with the help of the diagrams in Figure 1. The first one describes the normal acid-base composition of the blood plasma. The values for the several components of the plasma base are superimposed in the left-hand column. The other column is composed of the values for the acid radicals which together cover the plasma base. The line down the center of the diagram indicates correctly that in the plasma we have to deal, not with salts, but with separately controlled concentrations of the component ions of the various salts which our food intake supplies. Across the top of the diagram is the small concentration of carbonic acid and just below it the twenty times larger concentration of bicarbonate ion, HCO_3, which together with the base which it covers constitutes the plasma bicarbonate. Carbonic acid, as we have said, is controlled by the respiratory mechanism. Bicarbonate is under renal control, but not directly. That is, if the kidney succeeds in sustaining the other components of the plasma at their normal values, bicarbonate will also be on the mark. But if change is permitted to occur in any other part or parts of the plasma structure, bicarbonate will change in the direction which will preserve total acid-base equivalence; which is indicated in the diagram by the equal heights of the two columns. For instance, in the second diagram (Fig. 1 *B*), the sum of the concentrations of the other acid radicals has risen above the usual level. This results in bicarbonate ion being dispossessed of base to an equivalent extent. This bicarbonate is released as carbonic acid and is immediately removed from the plasma by the lungs. The reverse event is shown in the next diagram (Fig. 1*C*). Here a recession in the sum of the other acid components has occurred. Uncovering of base is prevented by a corresponding increase in bicarbonate ion. The bicarbonate ion used in this process comes from the free carbonic acid which the respiratory mechanism sustains in the plasma at a fixed level. In the last diagram (Fig. 1*D*) a reduction of base is seen to cause an equivalent loss of bicarbonate.

And so we find that bicarbonate exhibits an alert adjustability which prevents the uncovering of the radicals of strong base or of strong acid in the plasma, an event which would cause a change of reaction of a degree incompatible with life. A change of reaction of very much smaller degree does, however, occur as a result of alteration of the carbonic acid-bicarbonate ratio which these changes in bicarbonate cause. Bicarbonate being the alkaline component of the ratio, a decrease causes an increased acidity or acidosis and an increase an abnormal alkalinity or alkalosis.

The summary of this preamble is that change in the plasma bicarbonate is never a primary event. It is always a necessary adjustment to change in some other part or parts of the acid-base structure of the plasma. So it follows that study of the pathogenesis of acidosis or alkalosis must consist in finding the underlying defect in the plasma structure and in then explaining this defect in terms of the accompanying circumstances of disease. Theoretically this plan of study requires a complete dissection of the chemical anatomy of the plasma. This would be a laborious task and fortunately we are forbidden to undertake it because it would require an exorbitant blood sample. Usually, however, we can obtain a satisfactory account of the cause of the change in bicarbonate by making only three measurements. The total base of plasma, that is the sum of the concentrations of sodium, potassium, calcium, and magnesium, can be measured by a single procedure. If we then measure bicarbonate and chloride we have left unmeasured only the remnant of the acid column which is composed of the several relatively small items of plasma structure. The diagrams in Figure 2 are constructed from these three measurements obtained from the blood plasma of individual patients. They will serve to illustrate various distortions of the structure of the plasma and the resulting change in bicarbonate. In these diagrams *B* means total base and the remainder of the acid column is designated *R*. As we have already seen, the quantity of bicarbonate in the plasma is determined by the extent to which total base stands above the sum of the other acid radicals. The purpose of the diagrams is to demonstrate how this availability of base for the formation of bicarbonate is altered by change in other parts of the plasma structure.

Since the kidney is the organ of regulation of the composition of blood plasma, we will ex-

pect to find disturbance of this control in renal disease and we *do* find the development of a variety of defects of plasma structure. The most common one is described by this first diagram (1) from a patient with chronic Bright's disease and consists in an extension of *R*. This has been found to be composed of an increase in the concentrations of the radicals of phosphoric acid, sulphuric acid, and the group of organic acids. That is, we have retention of plasma components which ordinarily are carried at relatively very small concentrations. The chloride ion having its usual concentration, this increase in *R* makes necessary a corresponding reduction of bicarbonate and explains the moderate degree of acidosis so frequently found in the course of chronic nephritis.



RELATIONSHIP OF ALTERATIONS OF ELECTROLYTE STRUCTURE OF PLASMA, PRODUCED BY VARIOUS CONDITIONS OF DISEASE, TO CHANGE IN BICARBONATE.

Fig. 2

The next diagram (2) is from a patient in a very advanced stage of the disease. Here we have a much larger increase in *R* and also another structural change, reduction of total base which also lowers bicarbonate. These two changes together explain the extremely severe degree of acidosis which often develops in the terminal stage of chronic nephritis.

When gastric secretions are vomited there occurs a loss of sodium and a much larger loss of chloride ion from the plasma. The diagram (3) from an infant who habitually regurgitated his feedings shows a small loss of chloride ion which has caused a moderate increase in bicarbonate. In this situation, as we have just said, there is also a loss of sodium; so we have to explain why this loss of base is not visible in the diagram. The adjustable factor in the diagram, bicarbonate ion, being on the acid side, it follows that the height of the diagram is determined by the base column. The height of the diagram measures the total ionic concentration and it is physiologically very important that this be held stationary because it determines the osmotic value of the plasma. So when there is a loss of base, the kidney, so long as it is able to function accurately, removes a corresponding quantity of plasma water and in this way preserves the normal concentration of base.

The next diagram (4) is from a patient with complete obstruction of the pylorus who had vomited his stomach secretions for several days before entering the hospital. One sees the enormous recession of chloride ion and in consequence this huge extension of bicarbonate indicating alkalosis of extremely severe degree. We also find in this diagram two other large structural changes, an increase in *R* and a reduction of base. These are the changes which we have just seen in the advanced nephritis diagram and here we may also refer them to the kidney. As you know, continued loss of stomach secretions sets up a rapid process of dehydration. When this loss of fluid has produced extensive reduction of blood plasma volume, severe impairment of renal function develops, and we have as shown in the diagram, retention of the smaller components of the acid column and on the other side of the diagram inability to sustain the largest and structurally most important component, sodium.

The next diagram (5) is from an infant suffering from diarrheal disease. Here the alkaline duodenal and intestinal secretions are lost along with the acid gastric secretions. This produces loss of sodium, chloride ion and water from the plasma in roughly their plasma proportions. Recession of chloride ion concentration therefore does not occur. Instead of the alkalosis, which is characteristic of vomiting, we usually find acidosis and this is referable, as we see in the diagram, to extension of R and reduction of base. These two changes are again the result of impairment of renal function caused by dehydration.

The most frequent cause of bicarbonate reduction is the presence in the plasma of incompletely oxidized fatty acids, the so-called ketone acids. Diagram (6) describes a very simple situation, the ketosis of fasting. As you see, the concentration of ketone acids covers base at the expense of bicarbonate. All of the other parts of the plasma structure retain their normal values. If we restore the usual level of carbohydrate metabolism, by an intravenous injection of glucose or by simply giving sugar by mouth, if this is practicable, these ketone acids will be oxidized and bicarbonate will recover its usual value. More or less complete starvation is, of course, a frequent incident of many conditions of disease.

The next diagram (7) is from a child in diabetic coma. Here we have a large concentration of ketone acids replacing its equivalence of bicarbonate. Also we have again increase in R and lowering of base and these changes contribute to reduction of bicarbonate to a desperately small value. These changes are the result of renal disability from the severe dehydration which is always a prominent and very dangerous feature of the situation in diabetic coma.

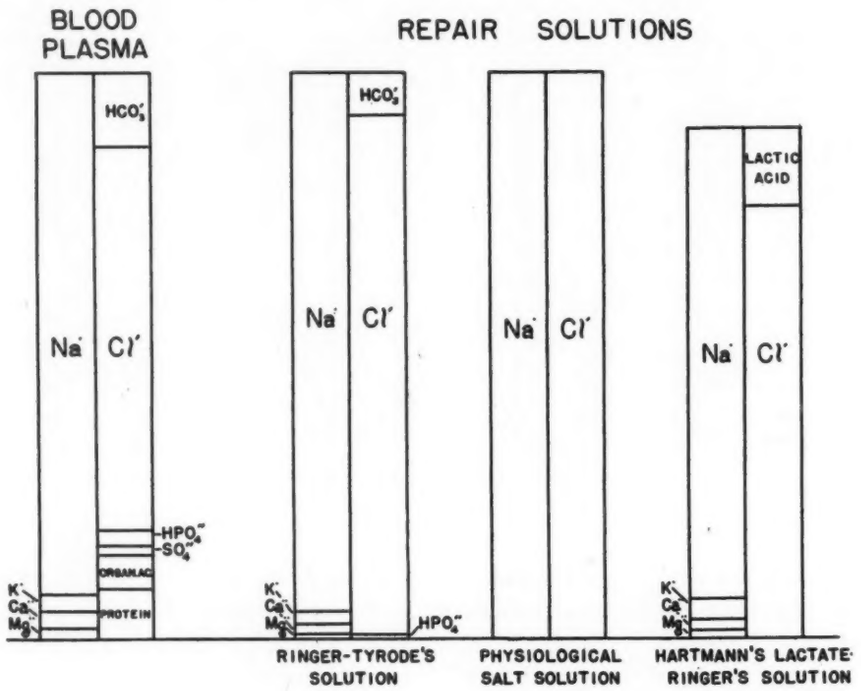


Fig. 3

Although the ketone acids always replace their equivalence of bicarbonate in the plasma and are the most frequent cause of acidosis, we may find ketosis in the presence of alkalosis as shown in the last diagram (8). This patient was a little child with upper intestinal obstruction. As a result of the incidental starvation, we find this very large concentration of ketone acids. Loss of stomach secretions by vomiting produced, however, a recession of chloride ion which is larger than the accumulation of ketone acids and so bicarbonate has to extend. The mystery of ketosis in the presence of alkalosis is thus explained and the diagram serves to remind us that we cannot dependably diagnose acidosis by finding ketone acids in the urine.

The diagrams portrayed were selected with the particular purpose of illustrating and emphasizing the fact that, in body fluid disturbances of such severity as to require energetic parenteral therapy, we nearly always have dehydration along with acidosis or alkalosis. And so in our attempts at treatment of these situations which are often very dangerous we are called upon to restore the volume of the blood plasma and of the interstitial fluid behind the plasma, and at the same time repair these various defects of structure. This would seem to be a very complicated assignment. Actually, however, we can usually accomplish it successfully with the help of only two extremely simple therapeutic agents.

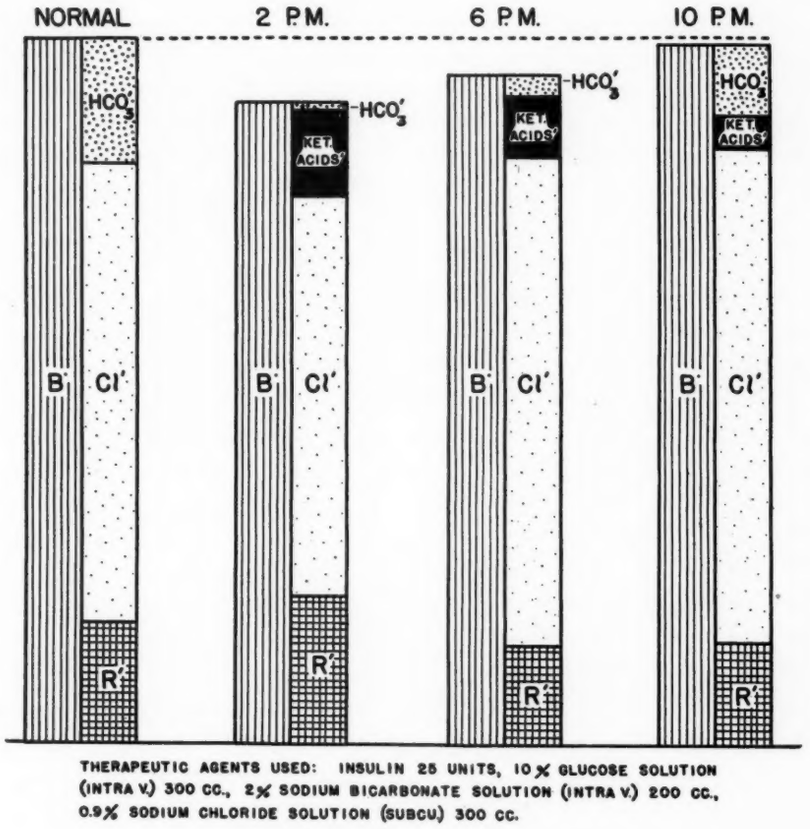

NORMAL
2 P.M.
6 P.M.
10 P.M.
HCO'3
KET. ACIDS?
B'
Cl'
R'
THERAPEUTIC AGENTS USED: INSULIN 25 UNITS, 10% GLUCOSE SOLUTION (INTRA V.) 300 CC., 2% SODIUM BICARBONATE SOLUTION (INTRA V.) 200 CC., 0.9% SODIUM CHLORIDE SOLUTION (SUBCU.) 300 CC.

Fig. 4

It would at first glance seem that, in order to provide for the rebuilding of the chemical structure of the plasma, we ought to supply all of the component materials; in other words that we ought to use one of the elaborate solutions which physiologists have devised for perfusion experiments, such for instance as Tyrode-Ringers solution (Figure 3). We probably can, however, dependably decide that it is not necessary to provide the smaller items of structure because they will be supplied in sufficient quantity by the processes of cellular metabolism which must carry on even in a situation of starvation. This does not apply to the two large components of the plasma structure, sodium and chloride ion because they occupy an exclusively extracellular position in the body. And so the apparent complexity of the therapeutic requirement disappears and the indicated agent of repair is simple physiological salt solution.

Our expectation then is that if we supply water, sodium, and chloride ion abundantly in the form of salt solution, the kidney will so regulate the retention of these materials individually and of the other materials supplied by the processes of metabolism, that volume will be restored and all defects of structure repaired with the result that the plasma bicarbonate will recover its normal value. This expectation obviously implies an alert and capable kidney and we have just emphasized the impairment of renal function which develops in the advanced stage of dehydration.

A second and very important therapeutic re-

quirement is, therefore, restoration of renal control over the individual parts of the plasma structure. This can usually be accomplished by intravenous injection of isotonic glucose solution. Glucose solution does in some way or other, and usually quite rapidly, restore renal function; probably by reëstablishing plasma volume and a normal flow of blood through the kidney. There is also the consideration that the water which glucose solution provides must be removed by the kidney and this presumably facilitates renal function.

Theoretically, salt solution will not offer water for removal until dehydration has been repaired. Glucose will also remove an accumulation of ketone acids if there is this blemish in the plasma structure, as there is so often owing to the frequency of starvation in these situations. Although there are these very important services which glucose solution provides, we should remember that it cannot directly repair dehydration because it does not replace the sodium and chloride ion which have been lost along with water. Only salt solution can restore the volume of the plasma and of interstitial fluid.

It is necessary to mention a third agent which should occassionally be used. When there is very severe acidosis, it is probably wise to give, as an initial procedure, an isotonic solution of sodium bicarbonate by intravenous infusion, with the purpose of sustaining a dangerously lowered bicarbonate until the reparative effects of salt solution and of glucose solution have been obtained. Instead of bicarbonate, the solution devised by Hartmann may be appropriately used. The essential feature of Hartmann's solution, as shown in the diagram (Fig. 3) is that it contains sodium lactate along with sodium chloride. The lactic acid radical is oxidized and bicarbonate takes its place.

The therapeutic agents for the treatment of dehydration and of acidosis and alkalosis are thus conveniently identical and, owing to the skillfulness of renal coöperation, they are very simple. The diagrams in Figure 4 will serve to illustrate the rapidity of their effectiveness. The patient was a three-year-old child in diabetic coma, extremely dehydrated and with only a small remnant of plasma bicarbonate. As shown in the diagrams, an almost complete repair of the plasma structure was obtained in the course of about eight hours.

I am sure that it has been difficult for you to follow this condensed presentation of an intricate subject. I shall be content if I have succeeded in persuading you that it is possible to translate the language of physical chemistry into terms and conceptions with which we as physicians are familiar. I feel very strongly that such interesting and medically important matters should not be regarded as the intellectual property of physical chemists.

The material in this paper, including the charts, is in large part taken from the 1937 Thayer Lectures given by the author at Baltimore and published in the Johns Hopkins Bulletin, LXI, 151-197.

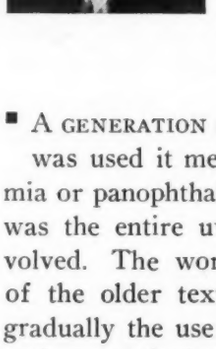
The figures are produced with the consent of the Johns Hopkins Press.

MSMS

Uveitis*

By Alfred Cowan, M.D.

Philadelphia, Pennsylvania



ALFRED COWAN, M.D.

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■ A GENERATION or so ago, when the term uveitis was used it meant either sympathetic ophthalmia or panophthalmitis. Only in these conditions was the entire uveal tract considered to be involved. The word is not even found in many of the older textbooks on ophthalmology. But gradually the use of modern methods of investigation, particularly the widespread clinical use of the slit lamp and corneal microscope, has led to the more common use of the general term,

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uveitis, to replace such specific diagnoses as iritis, cyclitis, iridocyclitis, kerato-iritis, iridchoroiditis and choroiditis. Opthalomologists have learned that opacities of the vitreous and precipitates on the posterior surface of the cornea are merely the products of inflammation or of degeneration —blood cells, plasma, fibrin and pigment—not disease per se and so such terms as hyalitis, descemetitis and keratitis punctata posticum or keratitis profunda have become almost extinct. The abbreviation K.P. previously used to designate keratitis punctata is retained to indicate keratic precipitates.

Whether or not the symptoms are more predominant in the iris, the ciliary body or the choroid, the other parts of the uveal tract are so frequently found to be involved in the process that even though such involvement for the time being cannot be verified by examination, the cautious clinician feels safe only in calling the condition uveitis. Even such terms as anterior uveitis or posterior uveitis are considered too specific. In practically every case of inflammation of the anterior parts of the uvea the posterior parts eventually become involved, and vice versa. Seldom, if ever, are the common signs of uveitis—turbidity of the aqueous, keratic precipitates, vitreous opacities—absent in affections of the posterior portions of the uvea. Indeed, a number of diseases which seem to originate in parts other than the uvea are associated from the beginning with, or are eventually complicated by, a severe uveitis; for example, interstitial keratitis, scleritis, detachment of the retina. Often the first signs of interstitial keratitis are those of uveitis and in many instances only after some time has elapsed can a definite diagnosis be made. Probably most cases that are diagnosed as idiopathic detachment of the retina are primarily uveitis, the separation of the retina a major symptom. Uveitis is so constantly and intimately associated with scleritis that it is the opinion of many, myself included, that what is generally called scleritis originates in the uveal tract and is actually only a variety of uveitis. At any rate I should never make a positive diagnosis of scleritis until signs of uveal involvement can be seen with the slit lamp and corneal microscope. There is no doubt in the minds of a great number of ophthalmologists that many cases of glaucoma, diagnosed and treated as primary, are in fact secondary to chronic uveitis. Every clinician, once in awhile, has a case of hypertension which is extremely hard to classify definitely as primary or secondary glaucoma. Neither is myopia a disease entity. The proper diagnostic term for so-called malignant myopia is chronic uveitis. The myopia may be a coincidence or a consequence, but it is not the disease.

Diagnostic Features

The term uveitis has come to be used to include a number of conditions which have been, and still are, treated as separate disease entities. Such a heading covers a large subject, far too large to be adequately discussed in the time allotted to this presentation and so I shall limit my remarks to a comparatively few phases of the disease, particularly to the diagnostic features of the subacute and chronic types as demonstrated with the slit lamp and corneal microscope.

Aside from hyperemia and ciliary injection, one of the first signs of an inflammation of the uveal tract is turbidity of the aqueous. Even in exudative choroiditis the aqueous, sometimes from the very onset of the disease and almost always eventually, shows some turbidity. (Vogt has pointed out that the normal aqueous is not absolutely transparent. It can be seen by careful examination that the normal aqueous is slightly relucent. If the rest of the anterior chamber is dark enough the edge of a narrow beam of light from the slit lamp can be faintly seen by contrast with its surrounding darkness. Basil Graves has shown that, in a dark room, the beam nearly always can be seen indirectly by looking slightly to the side. The slit lamp examination for pathologic relucency of the aqueous, the "aqueous flare," therefore, should not be made in a completely darkened room). The turbidity of the aqueous which results in more or less loss of transparency is due to exudates from the iris and ciliary body; exudates which are so fine that they cannot be seen. The visibility increases in proportion to the amount of exudate. Later, individual particles of fibrin and cellular and pigmentary elements, large enough to be seen appear as tiny specks moving with the convection currents of the aqueous.

An outstanding aqueous beam is the danger signal of sympathetic uveitis. It is the warning that radical measures are indicated at once. By the time actual cells and particles can be seen floating in the aqueous, it may be already too late to save the sympathizing eye. This symptom is much more important than the so-called sympathetic irritation. Careful, almost constant, observation with slit lamp and corneal microscope should be made in every case of injury, the nature of which is likely to result in sympathetic uveitis. In certain severe types of uveitis with rapid onset, particularly of gonorrheal origin, large clumps of white, cloudy, gelatinous or spongy exudates may entirely fill the anterior chamber.

Carried around by the aqueous current, the exudates find lodgment on the posterior surface of the cornea, on the iris and on the anterior surface of the lens. Sometimes they form a fine mist-like deposit over the posterior surface of the cornea—the "bedewing" seen by trans- or retroillumination with the slit lamp and corneal microscope. Collections of the exudate may form various sized aggregations, which give the appearance of droplets of a fatty substance, the so-called "mutton fat" variety of precipitate. The exudates may be translucent or opaque, round, oval, irregular, with sharp edges or amorphous, white, gray, pinkish or brownish. Occasionally the deposit forms a large, dense, plaque-like mass which clings to the iris, lens or cornea. Neither the character, shape, color, nor the amount of precipitate is indicative of the etiologic factor responsible for the disease. Any or all forms of exudates or precipitates mentioned, might be found in an acute, subacute or an exacerbation of a chronic uveitis, regardless of the underlying cause.

Course

As the severity of the condition subsides and recovery takes place many of the exudates disappear. The more rapidly they are produced the more rapidly they seem to be resorbed. The gelatinous and spongy masses, so frequently seen in gonorrheal iritis, often disappear in a remarkably short time, sometimes in a few days. The fatty type of K.P. usually remain for a long time. Shrinkage is manifested by the irregular or crenated borders, which is the first sign of subsidence. Fresh exudates are plump and have smooth edges. The deposit gradually becomes smaller, flattens and the color, which was a dirty or pearly white at first, takes on a tinge of brown. Either it becomes pigmented or it appears so because the pigment contents remain while the cellular elements only are resorbed. The pigmentary and fibrinous precipitates are often left as permanent remains. In cases of recurrent uveitis fresh precipitates, corresponding to the later relapses, will be seen intermingled with the older ones.

It has been stated that the adherence of exudates to the cornea takes place because the endothelium is affected. It is probably true that adherence is favored by a roughened endothelial surface, but there is no doubt that they will adhere to a perfectly smooth surface. The same exudates find lodgment also on the previously intact surface of the lens and on the iris. All that has been said regarding the conformations and the changes which take place in the corneal precipitates is true of precipitates on the iris and lens. In some instances the only permanent remains of a previously active uveitis lie on the lens capsule behind and peripheral to the pupillary border of the iris and can only be seen during mydriasis.

Although the precipitates are generally more numerous over a triangular area of the corneal surface corresponding to the lower quadrant, usually it can be seen that no part of the surface is free. It is only that in the lower quadrant they are more densely deposited. This arrangement is due to gravity and to the downward direction of the convection currents of the aqueous in front toward the cornea. In almost every case of Krukenberg spindle the granules can be found all over the posterior portion of the cornea. The distinctive spindle-shaped area stands out because it is there that the precipitates are more densely deposited. But the lower quadrant of the cornea is not always the site of the densest arrangement of corneal precipitates. Large clumps may be, and often are, found in other places on the cornea. The exudate may be deposited on any and all of the exposed surfaces in the anterior chamber. In a number of cases opacities are also seen deposited at the posterior surface of the lens.

Usually, when the greatest source of the exudate is the iris, the sticky substance plasters

the iris to the lens forming posterior synechia, but even in eyes in which the ciliary body is primarily and mostly affected we may have, and frequently do have, posterior synechia. A posterior synechia may be formed at the pupillary border, in which case it can be easily demonstrated on dilatation of the pupil with a mydriatic. But posterior synechia formed by attachment of the retinal pigment layer of the iris in places at some distance from the pupillary border are not uncommon. This variety of attachment cannot be seen; their presence is suspected by the affect on the action of the iris. If one of these is broken by a powerful mydriatic, pieces of the pigment epithelium might be torn from the iris, leaving permanent translucent gaps which transmit light and then are easily detected by retro- or transillumination.

Sequelæ

Anterior synechia occur more frequently in chronic than in acute uveitis. They are seen, too, in nearly every case after operation for senile cataract. It is claimed by many that they are frequently a cause of increased intraocular tension. There may be some truth in this inasmuch as anterior synechia are not infrequently associated with increased intraocular tension; but, also, many cases are seen in which, with anterior synechia surrounding the whole periphery of the iris, eliminating the entire angle, there is still no increase in intraocular tension. As a matter of fact, such eyes are usually soft, even mushy. That the products of inflammation cause a rise in intraocular pressure by blockage of the angle of the anterior chamber is another theory that is not sustained clinically. In uveitis with large amounts of debris in the angle hypotension, not hypertension, is usually found. If the hypothesis were correct glaucoma should be quite common in persons with senile depigmentation of the iris in which a considerable quantity of pigment is deposited in the angle. On the other hand, glaucoma is a complication to be expected in essential atrophy of the iris. Again, we might cite as an argument those cases of uveitis and even of exudative choroditis which are accompanied by glaucoma at the onset of the disease, long before an accumulation of debris sufficient to cause a blockage would be possible.

The occurrence of opacities in the vitreous similar to those found in the aqueous has led to the erroneous belief that the vitreous proper does not reach the lens, but that the fluid in the so-called retrolental space is continuous with and similar to the aqueous. This is not so. The vitreous body comes in contact with the axillary surface of the crystalline lens, being separated from it only by a capillary space. Plasma and cells usually can be seen in the vitreous in many mild cases and in all severe cases of uveitis whether the affection starts in the posterior or anterior parts of the uveal tract. They are probably the inflammatory exudates from the retina which has become involved in the process.

Whitish, fluffy, exudative nodules on the iris, particularly around the pupillary border, are frequently seen in subacute and chronic uveitis, less often in acute uveitis. These nodules, called Koeppe nodules, have some histologic resemblance to phlyctenules and for that reason are considered by many to be tuberculous; but this, in itself, is no good reason. Phlyctenular conjunctivitis is far from being generally accepted as of tuberculous origin. One might consider Koeppe nodules as tuberculous if and when, with the characteristic clinical course, they are found in association with other conditions which might justify a diagnosis of tuberculous uveitis; but they are certainly not pathognomonic. The same type of lesion is found in sympathetic ophthalmia, leprosy and numerous affections of the uvea of unknown origin. The diagnosis of most cases of tuberculous uveitis is made on pure supposition. Tubercle bacilli have rarely been found in a case of uveitis. Tuberculosis is accepted by many as the cause of exudative choroiditis on the basis of the questionable histologic findings in one or two instances. One may be justified in stating that a case of uveitis is probably tuberculous; but rarely, if ever, is it possible to make a positive clinical diagnosis of tuberculous uveitis.

Etiology

Regarding infection as the etiologic factor, there is often reasonable clinical evidence upon which to base a diagnosis; but here, too, much is taken for granted and there is no doubt that in many instances focal infection is given as a cause on the strength of mere probability. Probably never should a single infection, no matter how logical a factor, be regarded as the sole cause of the disease. Needless to state, comparatively few uveal diseases can be def-

initely associated with any positive etiologic factor. The most careful physical examination of the patient, blood tests, skin tests, x-rays, all the clinical and laboratory tests known, will be done without finding the slightest evidence of a possible cause.

Special Considerations

Frequently the first indication of insult to the iris or ciliary body is a disturbance of the pigment. Sometimes in traumatism, low grade inflammation and certain systemic diseases such as diabetes, the only manifestation is an absorption and migration of pigment. Because of trauma or of weakness from disease, the pigment-containing cells give up their contents. In diabetic patients occasionally the aqueous becomes inky with pigment on merely opening the anterior chamber. The pigment granules may adhere to parts nearby or they may float into the aqueous and finally pepper the surfaces of the iris, the lens and the cornea. After an iridectomy the pillars of the coloboma always show more or less pigment absorption. Loss of pigment from the iris or pigment deposited on the iris, lens or cornea may be the only evidence of past or present inflammation.

Often it is hard to draw a distinct line between a low grade, chronic uveitis and a degeneration. Also, certain diseases are believed to be degenerative, even familial, although it is admitted that patients suffering with such conditions may experience periods of inflammatory symptoms. It is not a rare occurrence to see definite signs of uveitis with the slit lamp and corneal microscope —K.P., pigment deposited on the surface of the lens and on the cornea, opacities in the aqueous, opacities in the vitreous and endothelial dystrophy—in a patient who shows no subjective or gross objective signs of disease. At times, careful examination with the slit lamp will disclose a few specks floating in the aqueous in an otherwise perfectly normal eye. Such eyes must be considered normal. Permanent pigmentary deposits on the lens capsule often simulate remains of the pupillary membrane. Only when associated with other signs of a previous inflammatory condition can a distinction be made in certain types of pigment deposit.

Absorption and migration of pigment is so common in elderly persons that probably it is a normal senile process. In these people the retinal pigment borders show segmentary areas of depigmentation, the migrated granules are seen scattered over the surface and in the crypts of the iris and deposited on the surface of the cornea and of the lens. The escape of the pigment is no doubt due to a weakness of the epithelial cells. When these symptoms are found in a young person they are a reasonably sure sign of disease, but when seen in a middle aged person it is extremely hard to determine whether the condition is a manifestation of the lowered vitality of early senility or the evidence of past or still active low grade inflammation. However, any one or more of the signs mentioned, if found in a person who complains of difficulty in sustained close work, ocular discomfort, pain, photophobia or slight dimness of vision, will suffice as a basis upon which to make a diagnosis of active chronic uveitis.

Over a period of years I have collected a number of cases, all affecting women, mostly during the menopause—normal, premature or induced—but all having a history of some gynecological condition, who complain of ocular distress, pain, and inability to do any kind of close work for more than a few minutes at a time. Because there are no gross signs of inflammation the symptoms are misleading and likely to create a feeling on the part of the patient and on that of the physician, that the symptoms are purely refractive, accommodative or muscular and that there must be something wrong with the correcting lenses. This, despite the fact that no sufficient fault can be found with the glasses, the accommodation or the muscle balance to account for the distress. Examination of these persons with the slit lamp and corneal microscope discloses definite signs of low grade, chronic uveitis. The condition lasts for months or years. It seems to respond best to a weak solution of dionin locally and endocrine therapy generally.

When I chose the term uveitis for the title of this discussion I realized, of course, that it would be possible to touch only on a few high spots of the numerous conditions included under this heading. What I hope to have brought out is that biomicroscopy has taught us that because of the so frequent involvement of the entire

uveal tract in these diseases we are justified in applying the general term uveitis in any case. Chronic, low grade uveitis and very early acute and subacute uveitis may be easily missed by ordinary gross methods of examination; but it is a frequent occurrence, so frequent that if for only the detection of this condition alone an examination with the slit lamp and corneal microscope should be made a routine part of the examination of every patient, regardless of his complaint.

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Cerebral Atrophy in Infants and Children*

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■ THE tragedy of the neurologically or mentally defective child—the feeble-minded, the spastic, the epileptic—is all too familiar to the pediatrician, neurologist and general practitioner. As has been long known, the causes of at least the first two conditions frequently date from the time of birth, although the clinical manifestations may be delayed months or even years before they occur or are recognized. Mechanical trauma to the newborn infant resulting in intracranial hemorrhage was long held to be the main cause of birth injuries and their sequelae, but today—largely due to the observations of two Michigan physicians, Dr. Frederic Schreiber[10,11] and Dr. W. C. C. Cole[4] of Detroit—we are again returning to the earlier concept, promulgated nearly a century ago by Little[8] (whose name is attached to spastic diplegia), of anoxia or oxygen deprivation of the body tissues, as the most common and destructive factor in producing cerebral damage.

There is now a large body of experimental study and clinical observation in this field, which embraces such various conditions as carbon monoxide poisoning, nitrous oxide anesthesia, mountain sickness, high altitude aviation and severe anemia, which time does not permit me to review in detail. Four points deserve special emphasis. First, the earliest and most disastrous effect of oxygen-deprivation is exerted on the central nervous system and particularly on the cerebral cortex and basal ganglia. Second, complete anoxia causes death of the affected nerve cells within a period of three to ten minutes, the last figure probably being somewhat over the critical limits. Third, the lower nervous centers being less susceptible, the patient who has undergone irreparable damage to his higher centers may and often does survive for months or years, mentally or neurologically crippled. Fourth, repeated shorter periods of anoxia, each below the critical limits, may exert a cumulative effect and also result in permanent damage. With respect to the immediate dangers and to the sequelae of anoxia in infancy and childhood, our attention in recent years has been too closely focused on the period of birth itself. Both on a theoretical and practical basis, there are important hazards of anoxia during intra-uterine life to which too little attention has been paid. The fetus throughout the nine months of gestation is entirely dependent for his existence and for the integrity of his central nervous system upon an uninterrupted and continuously adequate supply of oxygen from the mother. Interruption of this supply for as little as three minutes can produce permanent damage to the cortical centers and for a few minutes more will produce fetal death. Table I shows the variety of risks to his oxygen supply to which he as well as the newborn infant may be subjected.

After birth and throughout the remainder of his life, the child is also subject to various risks of anoxia.

While anoxia is perhaps the commonest cause of cerebral atrophy, it is not the only one. For this reason, we have collected a series of forty-nine cases, all of which have been shown by air encephalogram to have some degree of cerebral atrophy as demonstrated by dilatation of the lateral ventricles, the subarachnoid spaces or both,

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TABLE I. CONDITIONS CAUSING ANOXIA IN FETUS AND NEWBORN INFANT

A. Anoxic type (defective oxygenation of blood)
   I. Low O_2 tension in maternal blood
      Inert gases (N_2O, etc.)
   II. Pulmonary abnormalities in mother (pneumonia, etc.)
      Respiratory abnormalities in child: depressed respiration from sedatives; mucus in trachea; atelectasis
   III. Placental abnormalities
      a. placental separation (praevia, ablatio)
      b. occlusion of villi (syphilis)
      c. hyperplasia and edema of villi (erythoblastosis)
      d. compression of umbiblical cord
   IV. Right to left cardiac shunt in mother

B. Anemic type (lowered oxygen capacity of blood)
   I. Anemia
      a. maternal anemia
      b. fetal anemia
   II. Hemoglobin alteration
      a. CO poisoning of mother
      b. Methemoglobinemia of mother (sulfanilamide, acetanilid, etc.)

C. Stagnant type (slowed circulation)
   I. Circulatory failure in mother
      Circulatory failure in fetus
   II. Peripheral vasoconstriction: maternal shock
   III. Obstruction of venous return (compression of cerebral veins)

D. Histotoxic type (toxic effect of drugs, et cetera on cells, interfering with intracellular oxygen exchange)

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and have tried to analyse, as far as the available data permit, the probable causative and contributory factors. Table II shows the kinds and combinations of clinical manifestations that were observed. A few case records, selected to illustrate the variety of etiologic factors, will be given.

Case 1.—J. S., nineteen months old, was admitted because of retarded development. When eight months pregnant the mother had bronchitis and pleurisy. Examination then suggested placenta praevia. On the day of delivery, which was near term, uterine cramps occurred at 1 p.m.; at 1:30 p.m. there was bleeding with passage of clots; at 4:46 p.m. nitrous oxide anesthesia was started for cesarean section and continued until 5:00 p.m., when the infant was delivered, a total of fourteen minutes. The infant was not asphyxiated, but torticollis was noted. "Queer movements" of the extremities, with opisthotonos and repeated vomiting, occurred on the second day. Gavage feeding was necessary. The child's development has been very backward in all respects. He has never walked. Examination showed the left side of the skull to be small; there was weakness of both legs with spasticity of the left. Air encephalogram showed dilated ventricles and cortical atrophy. The causative factors in this case appear to have been (1) separation of the placenta lasting about three and one-half hours and (2) nitrous oxide anesthesia for fourteen minutes. The mother's bronchitis and pleurisy may also have played a part. Again it is noteworthy that no cyanosis or apnea was noted in the infant at birth.

TABLE II. CLINICAL MANIFESTATIONS OF CEREBRAL ATROPHY

Forty-nine Cases

Mental deficiency only	4
Convulsive state only	7
Spastic paralysis only (all hemiplegic)	5
Mental deficiency and convulsive state	9
Mental deficiency and spastic paralysis	14
Mental deficiency, convulsive state and spastic paralysis	8
Convulsive state and spastic paralysis without mental deficiency	2
Total with mental deficiency	35 (72%)
Total with spastic paralysis	31 (63%)
Total with convulsive state	26 (53%)

Case 2.—R. J., seventeen months old, was admitted for backwardness and peculiar movements and attitude. The labor had lasted eighteen hours when the physician gave "shots" and "gas" and broke the membranes; the cord then prolapsed and could not be replaced. Born forty minutes later, the infant failed to breathe until artificial respiration, oxygen and an intracardiac injection had been given. He had repeated attacks of cyanosis for the next week and had to be tube fed for the next two weeks. On examination, he was in almost constant opisthotonos, with writhing movements; he had hyperactive reflexes and was blind. Air encephalogram showed dilated ventricles and cortical atrophy.

Case 3.—J. G. was born in our hospital and was under observation from birth to the time of death. The mother had been twice married. By her first husband she had a child who is now ten years old and has never been seriously ill. The first child of her second marriage was jaundiced and anemic at birth and died at the age of two days. The second pregnancy was uneventful; the labor was short and no anesthetics were used. At birth the child was deeply jaundiced but not cyanotic and breathed at once. Examination of the blood revealed a typical picture of erythroblastosis fetalis. During the first two months the child was kept alive by seventeen transfusions, but after this the blood assumed an essentially normal character. He did not, however, develop normally. Spasticity was definite at the age of twenty-two months. At thirty months he was still unable to hold up his head and a psychometric study showed an I.Q. of 0.30. He was in opisthotonos when examined, with a spastic quadriplegia. Air encephalogram showed cortical atrophy. Against urgent advice the mother again became pregnant and, despite further advice to have a therapeutic abortion, went on to term. This child was also severely jaundiced at birth and died on the third day. Autopsy showed deep biliary staining not only of the basal ganglia but of areas in the cerebral cortex.

The etiological factor in this case is probably twofold; in fetal erythroblastosis, the commonest form of which is icterus gravis, fetal anemia impairs the oxygen carrying power of the fetal blood; and there are hyper-

plastic changes in the placental villi which may well impair the transfer of oxygen from the maternal to the fetal circulation. Degenerative changes with biliary staining are commonly found in the basal ganglia of the infant—hence the name, Kernikterus or nuclear jaundice—but they are also present in the cerebral cortex and are then demonstrable by encephalogram. As will be shown, this disease is one of the fairly common causes of cerebral atrophy.

Case 4.—K. K., seven months old, was admitted for backwardness and convulsions. The pregnancy was uneventful. The labor lasted only one hour and, while chloroform was used at the end, the mother was conscious throughout. At the age of five weeks the baby had a high fever of 104°; on the third day, a series of convulsions began which lasted in almost unbroken sequence for 10 days. She has been very hard to feed since then. At four months tonic spasms began which have recurred two to three times daily since. When examined the baby could not hold up her head; all the extremities were spastic, with hyperactive reflexes. The spinal fluid showed 7 cells, all lymphocytes. Air encephalogram showed cortical atrophy. Neutralization tests were positive for equine encephalitis; Western type, which was, therefore, the causative factor in this case.

Case 5.—W. B., a three-year-old girl, was admitted because of great backwardness. The pregnancy was uneventful except for some albuminuria during the last four months. The labor lasted fourteen hours; it is uncertain whether instruments or sedation were used. At birth the child cried at once and there was no cyanosis. She was apparently normal till the age of two months, when she had whooping cough; the paroxysms were severe and the child was, as the parents said, "quite breathless" during them. A peculiar appearance of the eyes was noted a month later but it was not until she was 11 months old that the parents clearly recognized that she was not normal. She could not sit up and could not use the right hand. On examination, it was obvious that intelligence was very low. All the extremities were weak and spastic. The left side of the head was smaller than the right. The air encephalogram showed the most extreme atrophy that we have ever seen; the cortex consisted of a thin shell between enormous ventricles and the subarachnoid space and had apparently ruptured, producing a direct communication between them. The etiologic factor appears clearly to have been anoxia from severe, prolonged and repeated paroxysms of pertussis, a disease which is particularly disastrous in young infants.

It is to be regretted that when one goes back to records, they are never as complete as one would wish. Though our histories were taken with perhaps more than ordinary care, many factors of importance have probably escaped us, partly because they were not inquired into, mainly because our informants did not have necessary information. Mothers are often not informed of the exact state of baby at birth, of the kinds of drugs or anesthetics used; or even of some of the complications of labor.

TABLE III. PRENATAL FACTORS

Twenty-five Cases

Placental separation (bleeding, placenta praevia)	5
Placental hyperplasia (erythroblastosis fetalis resulting in nuclear icterus)	4
Toxemia (2 with symptoms, 1 with albuminuria)	3
Prematurity	3
Premature labor pains	2
Premature rupture of membranes (6 days antepartum)	1
Trauma to mother (falling)	2
Attempted abortion with ecbolics (unsuccessful)	1
Attempted induction of labor (unsuccessful)	1
Pneumonia in mother	1
Cardiac decompensation	1
Twin (other twin died at birth)	1

The accompanying tables show the causative and contributory factors that were actually recorded, or suggested by the information available.

Discussion

Prenatal Factors

Consideration of the various etiologic factors presented shows clearly that the majority of cases cannot fairly be ascribed to incorrect obstetrical management or to mechanical trauma to the fetal head and intracranial hemorrhage. Most of them can be reduced to the common factor of anoxia, it is true, but emphasis should be placed on a fact which has been largely overlooked, that anoxia can and does occur during gestation and also during postnatal life with results just as disastrous as when it occurs during labor. There can be little question that many such episodes occur during fetal life which do not produce recognizable symptoms in the mother or which produce such fleeting or minor symptoms that they are overlooked or forgotten. One mother of a spastic child, for instance, finally remembered that about the middle of her pregnancy she had had a short bout of uterine cramps.

Uterine bleeding of slight degree and duration during pregnancy is not uncommon, and probably means some degree of placental separation which does not threaten the mother's life or give rise to the stormy signs and symptoms usually associated with that diagnosis. Our figures suggest, however, that such bleeding may interrupt the feto-maternal circulation long enough to produce serious damage to the fetal brain. The effect of trauma to the mother on the fetus probably be-

TABLE IV. NATAL FACTORS

Fifty-two Cases

Sedation		8
"Shots," unspecified	2	
Moderate (dose and kind known)	3	
Heavy (evaluated by effect on mother)	3	
Anesthesia		14
Nitrous oxide	9	
Chloroform	2	
Ether	2	
Kind unspecified	1	
Pitocin		1
Presentation, abnormal		
Breach		3
Delivery, abnormal		19
Difficult (instrumentation not stated)	3	
Dry labor	2	
Forceps (one high)	8	
Poor pains	1	
Version	1	
Manual dilatation of cervix	1	
Precipitate	2	
Cesarean section	2	
Prolapse of cord	1	
Cord around neck	1	
Overweight infant (3860 grams and over)		6

longs in this category. In frank cases of abruptio placentae and placenta praevia with massive hermorrhage, the fetal mortality is high and Clifford[3] has shown that the baby who survives for a few days and then dies may show extensive softening of the brain, obviously due to anoxia. Attempts at abortion and induced labor may also result in cerebral damage to the fetus by producing uterine spasm and thus temporarily interfering with blood supply. Another type of fetal anoxia, not represented in our series, has been reported by Brander[2] and others in the case of pregnant women attempting suicide by carbon monoxide poisoning; Brander's patient seen at four and one-half years was an idiot with spastic quadriplegia.

The mechanism by which toxemia of pregnancy, a factor in some of our cases, might produce cerebral damage is not always clear. The condition is a recognized cause of placental separation. Moreover, an agglutinative imcompatibility between fetal and maternal blood has been found in some cases, which might produce serious circulatory disturbances in fetus as well as in mother.

Erythroblastosis fetalis, a condition usually thought of in connection with the newborn child, is, as its name states, in reality a disease of prenatal life with profound changes not only in the fetal blood but also in the placenta.[7] The latter is always much enlarged, often to one and one-half times the normal size. The villi are enlarged, the Langhans layer persists, the stroma is hyperplastic and edematous and the vessels are diminished in number, many of them packed with erythroblasts. The conditions favorable to fetal anoxia are therefore obvious; diminished oxygen-carrying power from anemia; interference with feto-maternal oxygen exchange due to changes in the villi. Many of these infants show severe degenerative changes, with biliary staining, not only of the basal ganglia but of the brain cortex as well (a condition known as Kernikterus or nuclear icterus); and suffer, if they survive, from mental deficiency together with spastic and athetoid disturbances.

This condition can, in a sense, be prevented. It is strongly familial and all or most of the offspring of a given married couple will show it. If one case occurs in a family, the parents should be warned not to have more children. Or, if the mother should become pregnant, I believe the grounds are medically sufficient to justify therapeutic abortion; if this is not legally valid, it should be made so.

Although no case of congenital syphilis is included in the present series, the nature and extent of placental changes are such as to interfere with normal oxygen supply to the fetus; and further investigation might well be in order to determine whether anoxia, as well as actual infection, of the fetus is not a factor in intra-uterine death and also in the cerebral changes that not infrequently occur in live-born syphilitic infants.

Maternal pneumonia during pregnancy is another source of anoxia, if it is extensive enough to reduce the transfer of oxygen from the air to the maternal blood. In one of our cases, this appears to have been a factor. In pneumonia during pregnancy, oxygen therapy would appear to be more urgently indicated than at other times.

Although we had only one case of cardiac insufficiency, its dangers manifestly apply to the infant as well as the mother. The damaged heart cannot maintain the abundant blood and oxygen supply to the fetus which is so essential to its proper growth, and even brief episodes of more severe anoxia may well inflict permanent damage limited to the brain if fetal death does not ensue. The risks of pregnancy in women with mitral stenosis and other cardiac disorders with even mild decompensation should be carefully considered with reference to the baby as well as to the mother.

Finally, as indicating the association of cerebral

damage with prenatal disorders, I call attention to the occurrence in nine of our cases of congenital deformities or malformations of various sorts. The exact nature of the intra-uterine disturbance cannot be stated, but it is of interest to recall that a similar common association with placenta praevia has been reported.

Natal Factors

During its progress from the uterus through the birth canal and until the head emerges, the fetus undergoes special risks to its vital oxygen supply and these are increased or supplemented by various accidents or incidents common in parturition. In general the existence and degree of fetal anoxia can be detected and measured by the slowing of the fetal pulse. During labor, the intra-uterine pressure rises with each systole of the uterus to an amount sufficient to impair the circulation of both uterus and fetus; restoration of blood and oxygen supply occurs during diastole. If uterine contractions are excessive and prolonged and diastole correspondingly shortened, fetal anoxia may reach serious proportions; the fetal pulse becomes slow and fetal life is threatened. Efforts made by the obstetricians to hasten delivery are frequently inadequate to prevent disaster to the infant. Lund[9] has shown that administration of oxygen to the mother at this time can save many babies and give the operator more time for necessary operative measures.

Forceps were used in at least eight and probably more of our cases. Neverthless, I do not regard low forceps, applied with ordinary judgment and skill, as a common or even an important cause of birth injuries to the brain. Rather their use indicates difficult labor as the true cause of fetal anoxia and cerebral damage. Indeed, the employment of forceps, by shortening the period of anoxia, has undoubtedly saved many babies from brain injury, and its benefits, in my opinion, far outweigh its potential risks. Forceps have far too often, and I believe wrongly, been blamed for intracranial hemorrhage, which in any case is an exceptional cause of the disorders we are considering today.

The special risks of nitrous oxide gas have only recently been recognized. Supposed for many years to be the safest of anesthetics, its potentialities for harm from anoxia and anoxic cerebral damage have been revealed by the studies of Courville[5] and others. It is still, however, almost universally employed in the second stage of labor as an analgesic and not uncommonly as an anesthetic for cesarean deliveries and other operative procedures, such as episiotomy.

TABLE V. CONDITION AT BIRTH

Forty-nine Cases

Apparently normal	31 (63%)
Apnea, cyanosis	10 (20%)
Condition not stated	8 (16%)

ABNORMALITIES NOTED DURING NEONATAL PERIOD

Congenital deformities	9
Convulsions	7
Repeated or prolonged cyanotic attacks	5
Jaundice, early, severe	4
Vomiting	2
Opisthotonos, inability to nurse, "queer movements," bleeding	each 1

Keeping in mind the fact that some degree of fetal anoxia occurs even in normal labors and that this is higher in prolonged, difficult labors, it must be remembered that any mixture of nitrous oxide containing less than 21 per cent of oxygen reduces the oxygen supply below that of normal air at sea level. Fifteen per cent oxygen —a common mixture in nitrous oxide administration—is 71.5 per cent of the normal supply in air, or 28.5 per cent less than normal.

This may be harmless enough when gas is given for short periods during normal labors, but in difficult labors when the fetal oxygen supply is already impaired by circulatory interference, any additional reduction in oxygen supply may easily increase anoxia to the point of producing cerebral damage. For operative procedures during parturition, such as cesarean section or even episiotomy, when longer, deeper and uninterrupted anesthesia is required, the danger of fetal anoxia is greatly increased unless 20 per cent oxygen or more is given, supplemented if necessary by ether.

The dangers of sedation to the mother with barbiturates and other drugs have been heavily emphasized recently and a controversy is ranging at the present time over their use. It is well to remember that their effect does not increase anoxia in the baby before birth but only after birth, and then only when the drug has been given about three hours or less before delivery and when dosage has been large. There can be no question that dosages in the past have often been excessive and many infants born so heavily narcotized that their respiratory centers have been

TABLE VI. POSTNATAL FACTORS

Twenty-five Cases

A. Infectious	
Encephalitis	8
Measles	3
Equine, Western type	3
Unspecified	2
"Meningitis," type unspecified (possibly encephalitis)	2
Febrile disease, unspecified, with fever	1
Pertussis	4
Pneumonia	1
Laryngeal diphtheria with severe serum reaction	1
B. Non-infectious	
Convulsions, severe, cause unknown, with anoxia	3
Hemorrhagic disease of the newborn	1
Anoxia, severe, cause unknown	1
Trauma to head	3

depressed to the point of producing anoxia; sometimes, as Schreiber's statistics show, with permanent damage to the infant's brain. Used in smaller doses, with reasonable precautions and with consideration of the infant's welfare as well as the mother's, the risks from such drugs would appear to be more than counterbalanced by their advantages. This is Eastman's[6] conclusion and from the pediatrician's viewpoint I see no reason to disagree with him.

Breech delivery involves a special risk of fetal anoxia and was a factor in three of our cases; possibly more, since several histories of difficult labor do not state the position of the child. The risk is due to pressure on the umbilical cord by the baby's shoulders and head, and if delivery of the head is delayed, especially when the birth canal is narrow or the head large, thus increasing the compression of the cord, the results may easily be disastrous. The administration of large amounts of oxygen when the shoulders and head are engaged would seem to be definitely indicated.

Six of our babies were 8½ pounds or over at birth. Babies of this size are a special risk, both from intracranial hemorrhage and from anoxia. The anoxic risk appears to be from the extra force of uterine contractions required to expel the large head and from the prolongation of labor which increases the normal degree and duration of obstructed blood supply. In such cases, again administration of oxygen to the mother would appear to be a rational procedure. Prevention of oversize by administration of the thyroid during pregnancy has been tried by Arnold[1] with reported success. Oxytocics, especially pitocin, have fortunately been largely abandoned. They offer a very serious risk of fetal anoxia by prolonging and increasing uterine systole and so reducing, often to a serious degree, the blood-oxygen supply to the infant. From the pediatric viewpoint, they should never be used.

The effect of prolapse of the cord in producing fetal anoxia needs no special explanation. It is one of the most serious accidents of birth in its effect on the infant, since the interruption of feto-maternal circulation is apt to be nearly complete. Here too, oxygen administration would seem to be in order, but even with it, if the head is not delivered within five minutes, death or cerebral damage is probable.

Finally, plugs of mucus may occlude the bronchial passages in the newborn infant and produce anoxia. The routine care of the newborn infant should always include the use of aspiration of mucus if breathing is impeded.

I should like to point out again that the absence of apnea or cyanosis at the time of birth does not rule out the possibility of prenatal anoxia. In our series, these signs were present in only ten, or 20 per cent, of the cases and were almost certainly absent in thirty-one, or 63 per cent. Serious damage to the higher centers may be present, without damage to the respiratory center in the medulla, due to differences in vulnerability from lack of oxygen, and as long as the respiratory center is intact the infant can breathe at birth and will show no cyanosis. In general, apnea results from factors operating at the time the infant emerges; such as heavy sedation and obstruction to the air passages. If nitrous oxide, for instance, has been stopped a minute or two before delivery, especially if oxygen has been given, the infant may breathe well and have a good color.

Postnatal Factors

Of the postnatal causes of cerebral atrophy, fewer fall in the category of anoxia than those of the prenatal and natal categories. The lesions of virus encephalitis may, it is true, possibly be due to intracellular anoxia, but the point is an academic one. Since, however, cerebral atrophy, followed by various degrees of spastic paralysis, by epilepsy and above all by mental deterioration, is a common sequel of equine, measles and possibly other types of encephalitis, these causative factors should be looked into when a patient with these disorders is being investigated. Equine encephalitis, especially, has become more common

and widespread of recent years; it affects the youngest infants and its sequelae might easily be mistaken for those of prenatal or natal anoxia.

Hemorrhagic disease of the newborn occurred in one case of our series, the only one in which intracranial hemorrhage was implicated so far as we could determine. This disease, due in most instances to deficiency of vitamin K, can be prevented; and with the increasing use of vitamin K, given to mothers or newborn infants, will become increasingly rare. Massive intracranial hemorrhage of the newborn is not common in our experience. While some hemorrhage from tentorial tears is not uncommonly found in dead newborn infants, these are usually small and not often sufficient to cause death from pressure. In a few instances, large subdural hemorrhages have been found, evacuated by aspiration or surgical means, and have left no permanent sequelae of brain damage. Being situated outside the brain itself, inside an expansible infant's skull, the amount of pressure is either insufficient to cause permanent damage to the brain or is so large as to cause death within a short time. Small petechial hemorrhages in the substance of the brain are common enough but in themselves not large enough to cause extensive damage to the brain. They are not infrequently an expression of asphyxia itself and the damage to the brain is due to the latter rather than directly to hemorrhage. In general, the hazards of hemorrhage are immediate rather than late; and, statistically, hemorrhage is, I believe, an infrequent and relatively unimportant cause of mental deficiency, spastic diplegia and the convulsive state.

Pertussis, on the other hand, when occurring in infants and young children, is a serious, common and very important cause of anoxic damage to the brain. Under one year this disease, which is too commonly thought of as a minor illness of childhood, carries a very high mortality rate, largely from bronchopneumonia; convulsions are frequent; of the survivors, a considerable percentage suffer from permanent cerebral sequelae, an example of which has already been cited. The factors producing anoxia are obvious: prolonged periods of expulsive expiration with deep cyanosis followed by brief periods of inspiration; increased intracranial pressure during paroxysms impairing cerebral blood supply, emphysema and pneumonia diminishing the oxygen-absorbing bed of the lung. In no condition with which I am familiar can so general and severe destruction of the cerebral cortex occur as in this disease.

TABLE VII. AGE AT WHICH CONVULSIVE STATE BEGAN

(Exclusive of cases due to acute infection)

Birth (continuous to admission at 1-16 months)	3
1-6 months	8
6-12 months	7
During first year	18
1-3 years	3
4-8 years	0
8-9 years	2

The relative importance of anoxia in general, especially of the prenatal or natal period, in the production of the convulsive state, cannot be estimated at the present time. There can, however, be little question that anoxia is sometimes and perhaps not infrequently a causative or contributing factor. Of special interest is the delay between the original insult and the onset of the first convulsive attack, as shown in Table VII.

Severe, prolonged or frequently repeated convulsions, from whatever cause, themselves produce cerebral anoxia. The most familiar result is, perhaps, the mental deterioration with atrophy which occurs in most severe epileptics sooner or later. Cyanosis is present in most cases of convulsions during the tonic state, when respiration is temporarily suspended. The duration of anoxia in this stage may be quite prolonged and sufficient to produce serious, destructive changes in the brain; repetition of anoxic attacks results in a cumulative effect, with more and more neurons destroyed. Even a single, very severe and prolonged convulsion may cause extensive damage. A period of so-called status epilepticus can be particularly disastrous. It is not necessary to assume that vascular spasm of the cerebral vessels is responsible for the cerebral anoxia, since the prolonged apnea alone appears to be sufficient. In a few of our cases, the cause of the initial convulsions was entirely obscure, but the severity and duration of the convulsions themselves and the accompanying anoxia afforded an adequate explanation of the cerebral atrophy that ensued.

A point of interest and, I believe, of considerable importance is the fact that in a large proportion of our cases—over a third of them—possible etiological factors operated at more than

TABLE VIII. CLASSIFICATION OF CASES ACCORDING TO PERIOD WHEN CAUSATIVE OR CONTRIBUTORY FACTORS OPERATED

Prenatal period only	7
Prenatal and natal periods	7
Prenatal and postnatal periods	3
Natal period only	13
Natal and postnatal periods	8
Postnatal period only	11
Total cases with prenatal factors	17 (35%)
Total cases with natal factors	28 (57%)
Total cases with postnatal factors	22 (45%)

one period, as shown in Table VIII. This observation suggests a strong likelihood of cumulative effect of insults to the brain, even when separated by a considerable period of time. This idea is supported by the experimental observations of Thorner and Levy[12] on guinea pigs, who comment on the summating effect of repeated brief periods of anoxia in producing permanent and increasing cerebral damage.

Study of this important group of cases has been impeded by the modern tendency to specialization, and the almost complete divorce of obstetrics and pediatrics. It is not merely that the obstetrician's attention is chiefly devoted to the mother and to bringing a live baby into the world; it is that the information which he might possess and the experience he has accumulated are not available to the pediatrician, who is too often in the dark as to the possible causes of the conditions he has to deal with after the child is born and placed in his hands. Naturally the obstetrician has little knowledge of pediatrics and the pediatrician little knowledge of obstetrics. As a pediatrician I feel no little presumption in even attempting to discuss the obstetrical problems involved in the subject now under consideration. I have long felt the serious need of a joint study of the problems of prenatal and natal anoxia in which the pediatrician and obstetrician could equally participate. Indeed, in my opinion, there should be a joint board of inquiry on anoxia in pregnancy, infancy, and childhood which would collect and analyze data, and make specific recommendations aimed at prevention. Among the interesting things revealed in the very small series of cases that I have analyzed, are the great variety of causation; the frequency of prenatal and natal causes and the minority of cases in which the infants were apneic at birth. It is a serious mistake to think that one explanation covers most of the cases. A comprehensive study such as I have mentioned would undoubtedly increase and better define the etiological factors, and lead to enormous improvement in our attempts at prevention. The preventive problem is far from being exclusively obstetrical, but applies to all those physicians who watch over mothers, infants and children.

In conclusion, I wish gratefully to acknowledge the assistance of Dr. Frederic A. Fender of the Stanford University School of Medicine, who placed several of the case records at my disposal and has been helpful in discussing the general problem with me. Part of the expense of the clinical investigation of the study has been borne by a grant from the Irwin Charity Foundation.

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MSMS

The diagnosis of clinically significant pulmonary tuberculosis is readily reached by the average practicing physician if certain fundamental procedures are used. One of the functions of the American Trudeau Society, the Medical Section of the National Tuberculosis Association, is to disseminate among the general medical public information about advances in these procedures. The treatment of tuberculosis in general is a specialized procedure which should at least be initiated with the counsel of a specialist. The American Trudeau Society offers a forum where practitioner and specialist can meet to discuss the technical problems involved as well as their practical applications.

Plastic Surgery of the Nose

Report of Cases

By D. F. Weaver, M.D.
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Henry Ford Hospital
Detroit, Michigan

D. F. Weaver, M.D.
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■ From the standpoint of etiology there are three types of nasal deformities which we are called upon to repair: first, the traumatic deformity; second, the congenital deformity; and third, either a traumatic or congenital deformity which may be mild, moderate or marked in a psychoneurotic or otherwise mentally unstable individual. Of course there may be a combination of a traumatic and congenital deformity. The mentally unstable or psychoneurotic individuals frequently feel that all of their trouble is a result of a slight or moderate deformity.

For economic, social and personality reasons, deformities of the first two types should obviously be repaired. Individuals of the third type should not be refused operation for the deformity if in the opinion of the psychiatrist the operation will improve the patient's outlook. Whenever it is felt that the degree of the deformity does not justify the patient's concern or there are other reasons to suspect that the patient is unstable, psychiatric consultation should always be obtained and one should proceed with the operation only on the advice of the psychiatrist.

No attempt should be made to persuade a patient to have a nasal plastic operation, for patients react to the same degree of deformity with a variable degree of displeasure. However, it is useless to belittle an obvious nasal deformity.

When general anesthesia is desired, intratracheal gas-ether is the method of choice. If injection anesthesia is to be used, a combination of local infiltration with block of the various nerves in their foramina is quite satisfactory. One or two per cent novocaine is usually used for this.

Fig. 1. Traumatic nasal deformity

A wagon wheel passed over the dorsum of this patient's nose in infancy. In 1936 a cartilage graft from her own rib was inserted by another surgeon. There was improvement, but the result did not quite come up to the patient's expectations. On May 20, 1940, the nose was refractured to reduce the width. A portion was removed from the upper edge of the alar cartilages to reduce bulbosity and a graft of stored cartilage was inserted into the columella to elevate the tip. The ends of the two grafts were sutured together with silk. Recovery was uneventful. The first four photographs show the patient before and after operation by another surgeon. The last two, the present postoperative result.

When a septal defection is so marked as to interfere with the plastic result or when other indications for a submucous resection are present, the septum should be operated on. When a cartilage or bone graft is to be used, it is felt that a submucous resection should usually be done as a separate procedure. When no graft is to be used, it is usually safe to do a submucous resection at the time of the plastic procedure. When this is

(Continued on Page 232)

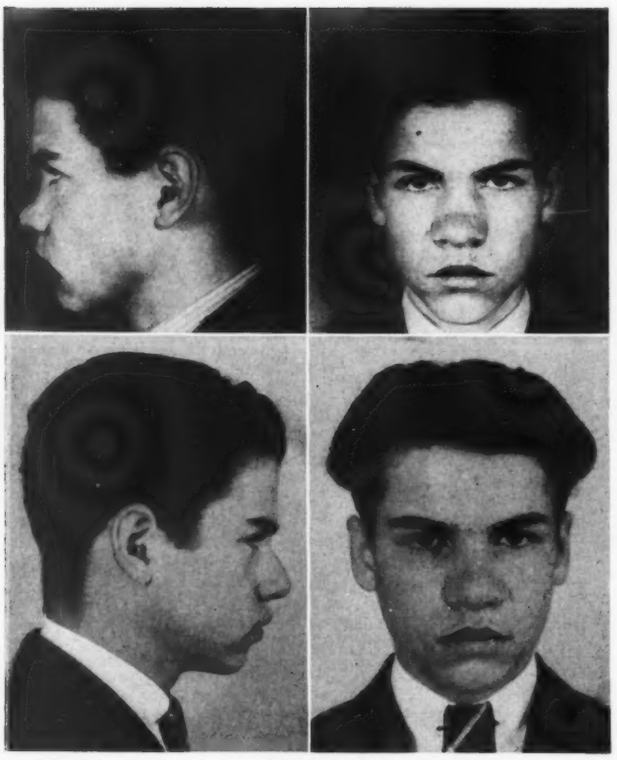

Fig. 2

Fig. 3

Fig. 4

Fig. 2. TRAUMATIC NASAL DEFORMITY

The nose was injured in childhood, but the details of the nature of the injury were not clear. On February 3, 1940, a submucous resection was carried out, and on March 18, 1940, after refracturing the nose to reduce the width, a graft of stored cartilage was inserted into the dorsum of the nose. Recovery was uneventful. The photographs show the patient before and after operation.

Fig. 3. TRAUMATIC NASAL DEFORMITY

Injured in childhood. The exact nature of the injury is not known. On May 16, 1940, a submucous resection was carried out. On April 7, 1941, after chiseling off the hump in the region of the nasal bones, an implant of stored cartilage was inserted along the dorsum of the nose and a post was inserted into the columella and adjoining ends of the implants sutured together with fine silk. It was not felt necessary to refracture the nose. Recovery was uneventful. The photographs show the patient before and after operation.

Fig. 4. TRAUMATIC NASAL DEFORMITY

History of injury to nose by bumping it on the head of another boy while running in 1935, and in 1937 he fell from a roof and fractured the nose. With each injury the hump on the nose increased in size. There was a rather marked septal deflection associated with the external deformity. On December 2, 1940, a submucous resection was carried out followed by removal of the hump, refracturing the nose, shortening the nose and making proper adjustments in the alar and upper lateral nasal cartilages. Recovery was uneventful. The photographs show the patient before and after operation.

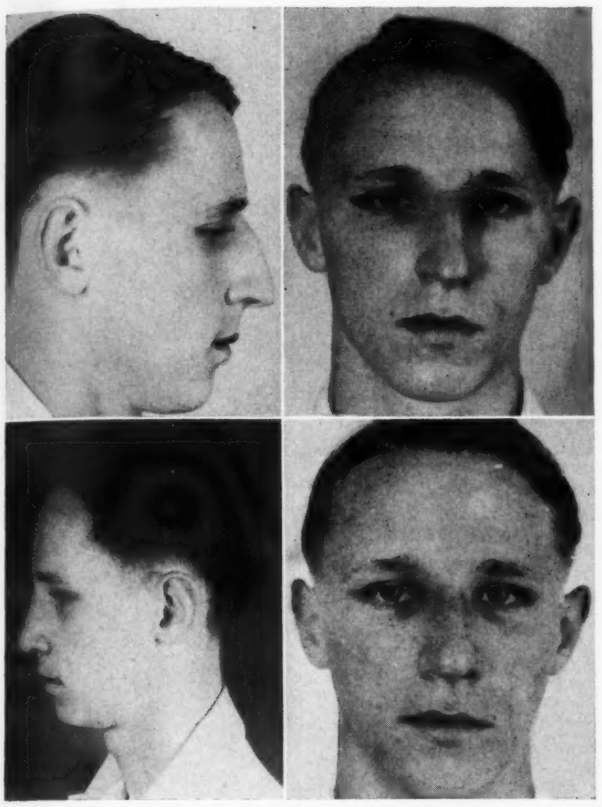

Fig. 5

Fig. 5. TRAUMATIC NASAL DEFORMITY
The nose was injured in 1936 while playing baseball. Prior to that time the nose had been straight and there was no nasal obstruction. On July 26, 1940, a submucous resection was carried out; followed by removal of the hump, refracturing the nose, shortening the nose, and in this case it was necessary to remove the anterior nasal spine. Necessary adjustment was made in the ala and upper lateral nasal cartilages. Recovery was uneventful. The photographs show the patient before and after operation.

Fig. 6. CONGENITAL NASAL DEFORMITY
Hair lip and cleft palate has been repaired previously elsewhere. Patient was interested only in the associated nasal deformity. On January 27, 1941, the nose was refractured. The medial crus of each alar cartilage was freed from the surrounding tissue and they were sewed together in such a way as to make the nostrils vertical instead of transverse. An implant of stored cartilage was then inserted in the dorsum of the nose and the excess skin which was left after readjustment of the nostrils, was excised. Recovery was uneventful. The photographs show the patient before and after operation.

Fig. 7. CONGENITAL NASAL DEFORMITY
Patient states that his nose was not abnormally large until the age of thirteen or fourteen when it began to grow out of proportion to the rest of his face. On June 2, 1941, a submucous resection was carried out, followed by a removal of a long hump; refracturing the nose; shortening the nose a suitable amount; removing the anterior nasal spine; and a satisfactory cartilage adjustment by removing a portion along the lower edge of the upper lateral nasal cartilage and a portion from the upper edge of the alar cartilage on both sides. This patient had a strong sense of inferiority due to the appearance of his nose. This had apparently completely disappeared a short while after the operation. The photographs show the patient before and after operation.

Fig. 6 (above). Fig. 7 (below)

Fig. 8. CONGENITAL NASAL DEFORMITY
This slight deformity was of quite a bit of concern to this young lady who was apparently stable in every respect. On May 16, 1941, the hump was removed; the nose refractured, reducing the width; the nose shortened slightly. Readjustment was made in the alar and upper lateral nasal cartilages and recovery was uneventful. The photographs show the patient before and after operation.

(Continued from Page 229)

done a separate operative setup including a complete change of gowns, gloves and instruments is used.

Since the operative technique has been described in detail in numerous publications and textbooks on plastic surgery, our technique will not be described at this time except in a general way. Each case presents an individual problem and each step has to be adapted to the particular problem which is presented.

Local infiltration and nerve block was the anesthesia used in all of these cases. The hump was removed by means of a saw in most cases. In one a chisel was used. A fine rasp was used to smooth the rough edge after removal of the hump. The nose was refractured in all cases by sawing through the nasal process of the superior maxilla, the saw being introduced through an intranasal incision along the upper edge of the

Fig. 9. CONGENITAL DEFORMITY AND MENTALLY UNSTABLE INDIVIDUAL
Family history of mental disease. Patient was concerned about the appearance of her nose out of all proportion to the degree of deformity. Our psychiatrist felt that if the appearance of her nose could be improved, it might help her mental condition, so with this understanding the operation was carried out. Following the operation the patient was delighted with the result and her mental outlook was changed tremendously and she appeared perfectly normal for a few months. Unfortunately, however, after about six months symptoms developed sufficient to make a diagnosis of early dementia praecox. The photographs show the patient before and after operation.

alar cartilage. When a graft was used, it was inserted through incisions made in the skin along the edge of each nostril. These incisions met in the midline at the upper end of the columella nasi. Shortening of the nose was carried out by removing a wedge-shaped portion of the anterior end of the septum. Also a strip was removed from the lower edge of the upper lateral nasal cartilages and when the tip appeared to be bulbous, a portion was removed from the upper edge of the alar cartilages. A metal splint was applied in each case and allowed to remain at least a week. The splints were removed for examination of the skin each day. Intranasal vaseline gauze packs were inserted at the time of operation and removed in about twenty-four hours.

A group of cases, representative of the types mentioned, is presented.

PUBLIC RELATIONS

Medical Postgraduate Education in Michigan

By Howard H. Cummings, M.D.
Ann Arbor, Michigan

FIFTY years ago doctors of medicine in our State brought to their patients the knowledge and training in diagnosis and treatment of disease which was acceptable for their time. Most of these practitioners continued, as long as they practiced, to use the same methods taught them while students in medical schools. How meager this knowledge was may be judged by contrasting the training offered by the medical schools of one half century ago with that of today. Fifty years ago, students attended a series of lectures and demonstrations for six months and returned the following year to hear the identical lectures again. Now, the preparation for the practice of medicine requires a preparatory period of three or four years in a literary school, four years of medical studies, one year of internship, and an additional period of from three to five years for training in a special field of medicine. Twelve months as against eight to twelve years!

The discoveries of Lister and Pasteur in the nineteenth century received so much commendation and so revolutionized medical practice that many progressive medical men in our country rushed to Europe to gain first hand information about the new methods. For over twenty-five years this pilgrimage of American physicians to London, Edinburgh, Paris, Berlin and Vienna continued. Upon their return to the United States, these doctors became the leaders of the profession and many established themselves as teachers and practitioners in special fields of medicine. That was the accepted method of obtaining postgraduate medical education. But now, under their leadership, the postgraduate training may be secured at home.

So rapidly has medical knowledge advanced in the past twenty-five years that no man can comprehend or put into use all of the scientific discoveries of this period. Chemistry, physics, biology and numerous other branches of science have made valuable contributions to medical knowledge. Clinical and experimental medicine have added a wealth of useful knowledge but yet there remain thousands of unsolved medical problems. Each year brings the answer to some of these perplexing questions, but until the practicing physicians know the solution and put it into practice, their patients fail to receive modern medical treatment.

A few examples of the fruits of recent research in medicine and their benefits to mankind might be enumerated: The causes and treatment of cancer have puzzled scientists and physicians for years, but recently progress has been made. The most startling discovery was based on the daily experience of physicians — that cancer develops frequently during the sexual changes of the climacteric period. Altered secretions of the sex glands have been found to play an important part in the development of certain cancers. The clinical application of this discovery is being tested and gives promise of some startling results. In the meantime, surgery, radium and x-ray are curing thousands of cancerous patients and alleviating and holding in check cases seen late in the course of the disease.

The appearance of the surgeon in the treatment of tuberculosis has proven most beneficial and is saving thousands of lives, by offering hope to that large group of moderately advanced tuberculous individuals. Formerly these patients progressed slowly to death and in so doing infected those associated with them. Now through surgery many are restored to health and usefulness.

The story of research in the field of glands of internal secretion and the vitamins is a long one and chapters are being added each year. Proved and tested products of this work are aiding every physician in maintaining and restoring health to his patients.

The recently discovered vitamin K has saved many newborn infants from hemorrhagic dis-

eases during the first ten days of their precarious lives, and a wholesome, vitamin-laden diet is aiding mothers to carry their unborn children and to give birth to strong babies capable of surviving the hazards of infancy and childhood.

Only a few of the subjects of major importance both to the physician and to his patients are studies of the metabolic diseases, especially diabetes; research on diseases of the heart and circulatory system; newer conceptions of the causes of rheumatism and arthritis; chemical studies of the body fluids; new methods of treatment of blood diseases; vast extension of the field of x-ray both in diagnosis and treatment; successful chemical attacks by sulfanilamide and its derivatives on certain bacteria which overpower, in many cases, the resistance of the human body.

About fourteen years ago, the physicians of Michigan, realizing the rapid advancements in the science of medicine, requested the Michigan State Medical Society in conjunction with the medical schools of Wayne University and the University of Michigan to formulate a plan of postgraduate medical education. From this request has developed by methods of trial and error the present Michigan plan of postgraduate medical education. Briefly this plan sets up teaching centers in nine regions and lectures are given in Ann Arbor, Flint, Battle Creek, Kalamazoo, Mt. Clemens, Grand Rapids, Jackson, Lansing, Saginaw, Bay City and Traverse City. In some regions, as in Saginaw and Bay City, also in Jackson and Lansing, the fall series of lectures is given in one city and the spring series in the other. Plans are being formed for five teaching centers for the Northern Peninsula.

One day of each week for four weeks both in the fall and the spring, physicians gather in their region to hear medical lectures and to join in the subsequent discussions. Sixteen different medical subjects are presented each year by teachers who have special knowledge and training in their field of medical practice.

For physicians who cannot attend the extramural lectures in their district, a composite one-week course, covering the sixteen subjects discussed at the teaching centers, is given each spring in Detroit.

Intramural courses for doctors who are especially interested in certain branches of medical work are given each year in both medical schools of Michigan. These courses run from one week to several months, and arrangements can be made for longer courses of study.

Response to Postgraduate Program

A survey made about seven years ago showed that 30 per cent of Michigan's doctors had taken some formal postgraduate training since graduation. Today over 50 per cent of Michigan's doctors are taking postgraduate work each year. If other means of obtaining modern medical knowledge and keeping abreast of the times such as attendance upon hospital staff, county society, State society and national meetings are considered, over 80 per cent of Michigan physicians are doing postgraduate work each year.

Each fall and spring, you may see in your local paper an announcement similar to this one.

"The public is requested to coöperate with the profession in refraining from all requests for nonurgent medical services between the hours of 10 a.m. and 3 p.m. on the next four Mondays.

"This is to enable all of the physicians to attend the postgraduate medical courses being on those days at the City hospital. For urgent and emergency calls, your physician, who will probably be in attendance, may be reached by calling the Nurses' Home at City Hospital."

Suggested Education of Laymen

If your family doctor has a habit of reading medical journals or of writing articles for medical journals; if he causes you some inconvenience by attending hospital staff meetings, county medical society meetings, State medical society meetings or National medical gatherings; if each fall and spring he is away from his practice for one day each week for four weeks, you are to be congratulated. You have a good doctor. He will bring to you and your family the latest and best methods of restoring you to health or of maintaining your present good health. Your doctor is a progressive man, who has the welfare of his patients at heart. He is to be trusted with your two most valuable possessions, your health and your life.

President's Page

OUR ROLE IN NATIONAL DEFENSE

BY the time this number of THE JOURNAL reaches our members, or soon thereafter, they will receive copies of the special Enrollment Form for the Procurement and Assignment Service. It is essential that every doctor complete this form and return it at the earliest possible moment.

The Procurement and Assignment Service was sponsored by the medical profession as a central agency for all divisions of governmental service. Its purpose is to classify physicians in order that they may be available for assignments of their own preference, insofar as possible, and for which they are specially qualified. Every consideration is being given to the retention of physicians in essential positions and the avoidance of undue dislocation in medical practice in communities. The Service has received the warmhearted reception of the medical profession and it is to the advantage of physicians to make a prompt return.

The information on the Enrollment Form will determine the status under the Selective Service Act of physicians who come under the jurisdiction of the latter agency. Local boards will consult the Procurement and Assignment Service, and a physician's enrollment will indicate his desire to serve in the Nation's defense program, thus insuring his professional status.

An article giving full details was published in the February 21 number of *The Journal of the American Medical Association*. Our members are urgently advised to consult this article for complete information.

Henry R Carstens

President, Michigan State Medical Society

EDITORIAL

THE COUNTY SOCIETY SECRETARY!

An Accolade

■ THE recent resignation of two veteran county society secretaries impresses upon those interested in organization the vital position held by the county society secretary.

The work of Wilfrid Haughey, M.D., of Calhoun and L. E. Holly, M.D., of Muskegon, who have asked to be relieved of their offices, are excellent examples of the active leadership attendant to that position. It is almost axiomatic that a live society has a kinetic secretary. With due credit to the officers and the general membership, the real burden of keeping up activity usually rests upon the secretary.

To list all the duties of this officer would be too encompassing, but a few may be well considered: keeping membership records, collecting dues, arranging meetings with all their divergent labors, acting as contact agent between the county society and the state and national organizations as well as with the newspapers and lay groups, taking and transcribing minutes, and acting as mediator. Any one of these duties often is a Herculean task, but to the good secretary—just part of another day's work.

The officers of the State Society extend to Drs. Haughey and Holly an appreciation for a good job well done and to all other county society secretaries thanks and the hope that their members will appreciate the importance of the chores and the workman.

PROGRESSIVE ACTION

■ THE Child Welfare Committee of Michigan State Medical Society has been a most active and progressive study group. A recent resolution adopted by this Committee demonstrates the valuable foresight of these men.

Taking cognizance of the recent sudden shift of population in Michigan caused by increased war industrial activity and necessary readjustments, and of the development of congested areas which over-tax the ordinary health control measures and organizations, it recommended to The Council of the Michigan State Medical Society that the State Department of Health be requested to appoint a committee with the following purposes:

"1. To carry on a study of the needs arising from the above mentioned situation;

"2. To draft a Uniform Code of Procedure for the prevention of epidemics and for the control of communicable disease;

"3. To make every effort to communicate such Code to all interested parties, including physicians, local health officers, sanitary engineers, nurses, et cetera; and

"Whereas, this is a problem which calls for complete coöperation and coördination between a number of interested groups; therefore be it

RESOLVED, That this Committee-to-be-appointed include representatives of the Michigan State Medical Society, the State Department of Health, the Michigan Branch of the A.A.P., the State Nursing Association, and the Department of Public Instruction, with the privilege of calling in for consultation or advice any or all persons or groups they may deem advisable or necessary."

There was no hesitation on the part of The Council to confirm this Resolution. It is expected that establishment of such a committee will soon be achieved.

✶ YOU AND YOUR BUSINESS ✶

OCCUPATIONAL DEFERMENTS OF DOCTORS OF MEDICINE

Local Draft Boards must consult the Procurement and Assignment Service for information on any selectees who are doctors of medicine; further, it is mandatory that this information be considered by the Draft Board in determining the registrant's classification.

An order to this effect signed by Lewis B. Hershey, Director, National Selective Service System, was sent to all Local Draft Boards on January 28, 1942, as follows:

Information previously distributed by this Headquarters clearly indicates an over-all shortage of medical doctors, dentists, and doctors of veterinary medicine in the Nation. Since war was declared, the shortage of these professional men has become acute. It is now manifest that every qualified doctor, dentist, and veterinarian must serve where he can render the greatest professional service to the Nation.

In order to accomplish this purpose, the President, by Executive Order, has formed the Procurement and Assignment Service, under the Office of Defense Health and Welfare Services. This Service was formed primarily for the purpose of gathering and making available information with respect to the supply of qualified practitioners in the fields of medicine, dentistry, and veterinary medicine, with a view of securing the most effective allocation of medical manpower as indicated by the requirements of the armed forces, civilian needs, and industrial medicine.

To work with the headquarters of this Service in Washington, there is being organized a committee for each Corps Area in the Continental United States. Each committee will consist of five doctors, two dentists, and one veterinarian. The committees have been accepted as advisors to the nine Corps Area Surgeons, to the Naval District Surgeons, and to the Regional Medical Officers of the Office of Civilian Defense, and will operate not only through the subdivisions of the medical, dental, and veterinary associations, but also with the profession at large, in securing information and giving advice.

When considering the classification of any registrant who is a qualified medical doctor, dentist, or doctor of veterinary medicine, the Director of Selective Service desires that local boards, through the State Director, shall consult the Procurement and Assignment Committee of the Corps Area for information as to the availability of qualified medical doctors, dentists, and doctors of veterinary medicine in the community. This information shall be considered by the local board in determining the registrant's classification. The executive Order referred to in no way affects the authority of the Selective Service System to classify registrants. The procedure has been established for the purpose of making such information available to local boards.

The Procurement and Assignment Service has appointed a P. and A. Committee for the Sixth Corps Area (Michigan, Illinois, Wisconsin) to aid the Local Draft Boards in the above matter. P. R. Urmston, M.D., Davidson Building, Bay City, is the Michigan representative on this Committee.

NATIONWIDE IMMUNIZATION AGAINST DIPHTHERIA AND SMALLPOX

A major effort to secure the immediate immunization of 100 per cent of all children over 9 years of age against diphtheria and smallpox (850,000 in Michigan) has been recommended by the Child Welfare Committee of the Michigan State Medical Society. This is an opportunity, open to every practitioner in the state of Michigan, to help prevent disastrous epidemics in this state, particularly in those areas which have new defense plants and war activities. The profession's wholehearted coöperation in this immunization campaign, which is nationwide in scope, is urged by the Michigan State Medical Society.

A special bulletin, outlining suggestions for the conduct of this work by county medical societies, is being mailed by the MSMS Child Welfare Committee, which on February 4 adopted the following resolution:

WHEREAS, The Child Welfare Committee of the Michigan State Medical Society endorses a general program of childhood immunizations; and

WHEREAS, Such a program is always essential to the best welfare of children even in normal times; and

WHEREAS, Present defense activities occasion great shifts and congested concentrations in population, with resulting dislocation of normal activities and health safeguards; and

WHEREAS, In a number of Michigan communities such health safeguards and necessary control measures

have been disrupted which may result in deadly and ever-spreading epidemics unless preventive measures are effectively inaugurated and pursued at this time; therefore, be it

RESOLVED, That the Child Welfare Committee of the Michigan State Medical Society recommends that a major effort be made in the present serious emergency to secure the immediate immunization of 100 per cent of all children over 9 months of age against diphtheria and smallpox, for the health and safety of our State.

CIVIL RIGHTS OF PERSONS IN SERVICE — A DIGEST

Rents: During period of military service, no eviction from dwelling (not office) where rent does not exceed $80.00 per month, is permitted.

Installment Contracts, and Mortgages: No rescinding or terminating contract for purchase of real or personal property—or mortgage—where soldier or sailor has made a deposit or payment prior to October 17, 1940, except by court action or by mutual agreement.

Insurance Premiums: Administrator of Veteran Affairs guarantees payment of premiums of insurance up to $5,000.00, which may be repaid within one year after leaving service. (An added $10,000 of government insurance is offered each soldier and sailor.)

Income Taxes: If person in service is unable to pay the tax, it is deferred without interest or penalty for a period extending not more than six months after termination of service.

Taxes and Assessments on Real Property: If person in service is unable to pay the tax or assessment, no sale of property may be made to enforce collection, except on leave of court which may stay such sale for six months after termination of military service. If sale is completed, soldier or sailor has right to redeem property at any time not later than 6 months after end of military service.

Public Lands: Rights to homesteads, desert land entries, mining claims, mineral leases, and irrigation rights, held by persons in military service, shall not be forfeited or prejudiced during term of service.

Detailed information on the Soldiers' and Sailors' Civil Relief Act of 1940, approved by the President on October 17, 1940, was published in the *JAMA*, January 24, 1942, page 306. This complete analysis of the law is recommended to physicians who plan to enter the armed forces of the United States.

PROPOSED LIBERALIZATION OF SOCIAL SECURITY ACT

The Social Security Board intends to recommend to The Congress that the Social Security provisions be extended to include:

(1) disability allowance equal to the present unemployment allowances for periods of sickness; and

(2) additional allowances of $3.00 per day to the worker when either he or his dependents are hospitalized.

The hospitalization benefits would be in the form of an indemnity or payment to the employed worker upon the receipt of evidence that hospital care has been received. It is assumed that the workers might assign or authorize the payment of the cash directly to the hospital or to the physician who attended him—or to others than the hospital or physician.

Participation in the hospitalization benefits would be universal and compulsory for persons who hold Social Security numbers.

Will this inclusion of per diem allowances to 115,000,000 persons in the United States, through the Social Security Board, be the entering wedge for federalized hospitalization and medical care?

LOW MORTALITY RECORD FOR 1941

The Metropolitan Life Insurance Company advises that the unprecedentedly low figure of 7.4 per thousand wage earners and their families was obtained among the 16½ million persons insured in the industrial department of the Metropolitan. This was more than 2 per cent below the previous minimum. This new health record speaks volumes for the continuance of the present health system in America—the private physician-patient relationship.

GUARANTEEING HOSPITAL STAFF POSITIONS

Since January 12, 1942, the following Michigan hospitals have advised the Medical Preparedness Committee of the Michigan State

(Continued on Page 240)

These are the Reasons why we say "Try S-M-A"

- Physicians will find that S-M-A* is not a "compromise formula." It is a complete milk formula for infants deprived of human milk.
- Cows' milk fat is replaced with the unique S-M-A fat for easy digestion and adequate nutrition. It compares physically, chemically and biologically with the fat in human milk.
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(Continued from Page 238)

Medical Society that the hospital staff positions in their institutions, now held by doctors entering the armed forces of the United States, will be retained upon the physicians' discharges from active military duty. The following replies were received up to February 12:

Ann Arbor—University Hospital—H. A. Haynes, M.D., Director—guaranteed

Charlotte—Hayes-Green-Beach Hospital—B. P. Brown, M.D., Chief of Staff—guaranteed

Crystal Falls—Iron County Infirmary—Miss Elizabeth Carlson, Director—guaranteed

Detroit—Herman Kiefer Hospital—Bruce Douglas, M.D., Commissioner—guaranteed—St. Joseph Mercy Hospital—Ed. Maire, M.D., Pres. of Staff—guaranteed

Hillsdale—Hillsdale Community Health Center—W. W. Sawyer, M.D., Secy. of Staff—guaranteed

Lansing—St. Lawrence—C. S. Davenport, M.D.,—Secy. of Staff—guaranteed

Lapeer—State Home & Training School—F. R. Hanna, M.D., Supt.—guaranteed

Marquette—St. Mary's Hospital—Geo. I. Keskey, M.D., Secy. of Staff—guaranteed

Northville—Maybury Sanatorium—Bruce Douglas, M.D., Commissioner—guaranteed

Mt. Clemens—St. Joseph's Hospital—J. J. Reichman, M.D., Secy. of Staff—guaranteed

The first list of hospitals was published in the February, 1942 MSMS JOURNAL, page 144.

Additional replies, as received, will be published in the MSMS JOURNAL from month to month.

MALPRACTICE IS CONTAGIOUS

"*Malpractice suits* have all the characteristics of a contagious disease inasmuch as they are sporadic, endemic and, at times, epidemic. During the past ten years of economic stress and social unrest the 'suing habit' has reached a peak."

—Paul E. Craig, M.D., Doctors, Juries and Judgments, *The American Journal of Medical Jurisprudence,* September, 1938.

63,328 BEDS IN VETERANS' ADMINISTRATION HOSPITALS

During the past twenty-one years, a total sum of $208,723,029 has been made available for the construction of facilities for veterans. As of June 30, 1941, 61,849 hospital beds were under the control of the Veterans' Administration. As the result of such construction funds now available, all of which are definitely obligated or allocated (including $297,000 for one hundred additional general beds in the Veterans' Hospital at Dearborn, Michigan), and the work now under way or soon to be started, it is estimated that new construction during the fiscal years 1942 and 1943 will result in 1,479 additional beds, making a total of 63,328 beds in Veterans' Administration hospitals.

As of October 31, 1941, a total of 51,911 World War Veterans were receiving treatment in the ninety-one Veterans' Hospitals in use. Of this total, 77 per cent were being treated for nonservice disabilities, according to Federal Legislative Bulletin No. 13 of the Bureau of Legal Medicine & Legislation, AMA.

According to Brigadier General Frank T. Hines, Administrator of Veterans' Affairs, in testifying before a subcommittee of the U. S. House of Representatives Committee on Appropriations, nearly 8,000 beds are vacant in Veterans' Hospitals at this time.

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FRACTURES AND TRAUMATIC SURGERY—Two Weeks' Intensive Course will be offered starting May 4th. Informal Course available every week.
GYNECOLOGY—Two Weeks' Intensive Course will be offered starting April 6th. Clinical and Diagnostic Courses every week.
OBSTETRICS—Two Weeks' Intensive Course will be offered starting April 20th. Informal Course every week.
OTOLARYNGOLOGY—Two Weeks' Intensive Course will be offered starting April 6th. Clinical and Special Courses starting every week.
OPHTHALMOLOGY—Two Weeks' Intensive Course will be offered starting April 20th. Five Weeks' Course in Refraction Methods starting May 11th. Informal Course every week.
ROENTGENOLOGY—Courses in X-Ray Interpretation, Fluoroscopy, Deep X-Ray Therapy every week.

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Woman's Auxiliary

Bay County

Thirty-five members of the Woman's Auxiliary of the Bay County Medical Society met at the home of Mrs. A. L. Ziliak on Wednesday, December 10, for a dinner meeting.

A brief business meeting was conducted by Mrs. W. R. Ballard, president, in which she presented a report on the recent mid-year state auxiliary board meeting held in Grand Rapids. The members voted to wait until after the state meeting next fall before making any revisions in the constitution.

Mrs. Walter S. Stinson, Program Chairman announced that in connection with our year-long program on nutrition, the public meeting would be held January 7, at the Elizabeth McDowell Bialy Memorial Nurses' home at 8 o'clock in the evening with Dr. John Sheldon, of the University of Michigan medical school faculty, speaking on "Allergies."

Mrs. Harold Shafer was appointed chairman of the group's scrapbook. Clothing, to be distributed through the Civic League, was collected by the chairman, Mrs. F. T. Andrews.

The Auxiliary held its main meeting of the year which was free of charge and open to the public, on Wednesday evening, January 7, at the Elizabeth McDowell Bialy Memorial Nurses' Home.

Carrying on the program of nutrition study as a contribution to national defense, Mrs. W. R. Ballard, president, introduced Dr. John Sheldon, of the University of Michigan Hospital, Ann Arbor, who gave an illustrated lecture on "The Modern Concepts of Allergic Diseases."

The Woman's Auxiliary sponsored the lecture which was most interesting, and well over 200 persons attended. Mrs. Paul L. DeWaele, Corresponding Secretary

Ingham County

The Auxiliary of the Ingham County Medical Society met for a Christmas tea at the home of Mrs. Earl I. Carr. "Christmas in Many Lands" was the theme of the tableau presented.

On the program committee for the event were Mrs. C. S. Davenport, Mrs. T. I. Bauer, Mrs. W. J. Cameron, Mrs. L. G. Christian, and Mrs. K. W. Toothaker.

Mrs. Harold Wiley, president, and Mrs. Harry Weinburgh presided at tea. Mrs. M. C. Loree was chairman of the social committee for the day, aided by Mrs. Frank B. Heckert and Mrs. R. J. Himmelberger.

At the business meeting a substantial sum of money was voted to be given to the Ingham County Red Cross.

Ionia County

The Woman's Auxiliary of the Ionia-Montcalm Medical Society met Tuesday evening, January 13, at the Manor in Ionia for a dinner. After the dinner the women went to the home of Mrs. V. F. Kling where they held a brief business meeting. The remainder of the evening was devoted to Red Cross work.

The Auxiliary met Tuesday, February 10, at the Belding Home cafe for a 7 p.m. dinner. Following the dinner, they went to the home of Mrs. VanLoo for a business and social meeting. Red Cross first aid was discussed at the meeting. Members of the auxiliary were invited to attend a tea given by the Grand Rapids auxiliary at the Women's City Club on Wednesday, February 11.

Kent County

The annual dinner dance given by the Women's Auxiliary of the Kent County Medical Society was held December 6 at the Peninsular Club. Gay holiday decorations were of holly, pine sprays, and red candles.

The guest speaker at the regular monthly auxiliary meeting, on December 10, was Mrs. Wm. J. Butler, president of the Michigan State Medical Auxiliary. Mrs. Butler gave a very interesting talk on her hobby, "Sculpturing." She traced the history of sculpture through the ages, and accompanied her talk with many fascinating illustrations and a demonstration of clay modeling.

Preceding her talk on sculpture, Mrs. Butler reviewed the aims of the auxiliary in its work on the national nutrition project.

The Auxiliary held a luncheon meeting on January 14, 1942 at the Woman's City Club. Mrs. Charles F. Ingersoll presided at the business meeting in which members of the auxiliary decided to organize a class to take the Red Cross course in home nursing. The auxiliary also voted to invest part of its Benevolence Fund money in the purchase of seven defense bonds of the $100.00 denomination.

Mrs. Virgil E. Stover introduced the program speaker, Mr. L. E. Murphy of the Federal Bureau of Investigation. Mr. Murphy spoke on the "F.B.I. in Relation to Defense." After outlining the organization and activities of the F.B.I., he opened the meeting to questions. Katharine W. Brace, Press Chairman

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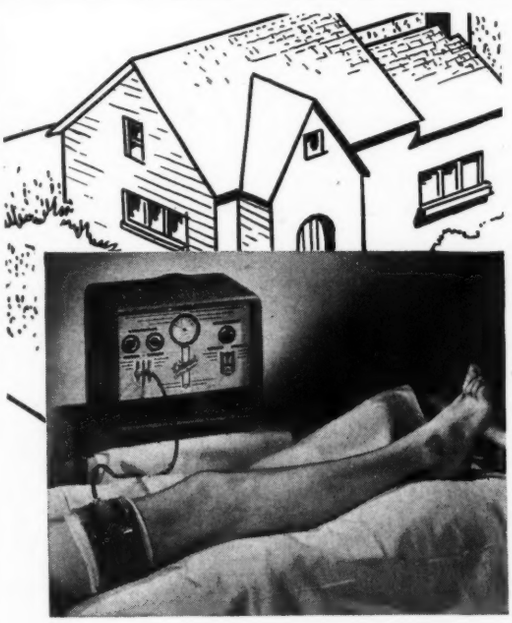

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MICHIGAN'S DEPARTMENT OF HEALTH

HENRY A. MOYER, M.D., Commissioner, Lansing, Michigan

BLOOD TESTS FOR SYPHILIS HIT MILLION MARK IN '41

Blood tests hit the million mark in 1941 for the first time in Michigan. The total of all laboratory examinations for syphilis performed in public health and in private registered laboratories was 1,050,268. A few thousands of these examinations were microscopic tests and spinal fluid counts but the rest were blood tests.

The first big upsurge in blood tests began after the premarital examination law went into effect in 1937. In 1939, a blood test was required by law for every expectant mother. Another boost in blood testing came when Selective Service required blood tests for all men called for Army examination. Fifteen per cent of last year's tests were due to Selective Service requirements.

About 40 per cent of the laboratory examinations for syphilis were made in the four State Health Department laboratories at Lansing, Houghton, Powers and Grand Rapids. About 25 per cent were made in the city health department laboratories of Detroit, Jackson, Kalamazoo and Flint. The remaining tests were performed in private laboratories registered with the State Health Department. On January 1, 1942, there were 148 laboratories registered to perform examinations for syphilis.

DEPARTMENT PREPARES FOR NEW EMERGENCIES

When outbreaks of epidemic disease occur in Michigan, the State Health Department is often called upon to send out a flying squadron.

The emergency may require a single epidemiologist. Or it may require several physicians. Quite often two or three are sent; in an all-out response the Department could send ten physicians from its own staff and in addition could call upon local health directors. Such a need has not yet presented itself.

The Department is ready to form several emergency squads if evacuation of civilians becomes necessary in Michigan or if any cities are bombed. For months the State Health Department has had semi-confidential reports on the methods of health protection which England has developed on a trial and error basis.

In addition to its staff physicians, the Department has a trailer laboratory unit which can be taken right to the scene of an emergency. In this laboratory specimens can be cultured and examined with no delay.

If necessary, Department physicians can be flown to the scene of an emergency in one of the state's airplanes. Vaccines can also be rushed to local health departments by airplane and in this war year of 1942 with continued movement of workers and soldiers, the Department is planning to fly vaccines or antitoxins wherever necessary. Emergency trips with vaccines are also made from time to time by the Michigan State Police.

Safe water supplies are one of the important protections for public health but sometimes emergencies turn a safe water supply into a threat to the whole community. For those emergencies, the Department keeps on hand portable chlorinators which can be attached to a water main and kept in operation until repairs are made. Usually one or two of the four emergency chlorinators are in operation somewhere in the state.

The Department has a standing arrangement with a Michigan manufacturer of chlorine so that a telephone call will start a truck with cylinders of chlorine to any place in the state where there has developed a water supply emergency. Engineers of the Department are on day or night call for emergency duty, and not infrequently they keep a local water works in operation in case of the death or disability of an operator.

DEPARTMENT TO MAKE TETANUS TOXOID

The Michigan Department of Health is planning to make tetanus toxoid for free distribution.

Money to begin manufacture and distribution of the toxoid is being requested from state war funds. Commissioner Moyer has submitted to Harry F. Kelly, chairman of the State Administrative Board Defense Committee, an emergency request for $15,698 to establish a manufacturing process and to produce 100,000 doses of tetanus toxoid. Through previous test production the laboratories of the State Health Department are already licensed to make the product by the National Institute of Health of the United States Public Health Service.

First use of the new toxoid will probably be made in defense areas for industrial workers and for children.

The State Health Department has been asked by the child welfare committee of the Michigan State Medical Society to produce combined tetanus-diphtheria toxoid, and the committee recommends that the combined toxoid be used by physicians in immunizing children. Notice of the committee's action was sent to Dr. Moyer by the committee chairman, Dr. Frank Van Schoick, of Jackson. Similar support came from

(Continued on Page 246)

PROFESSIONAL ANNOUNCEMENTS

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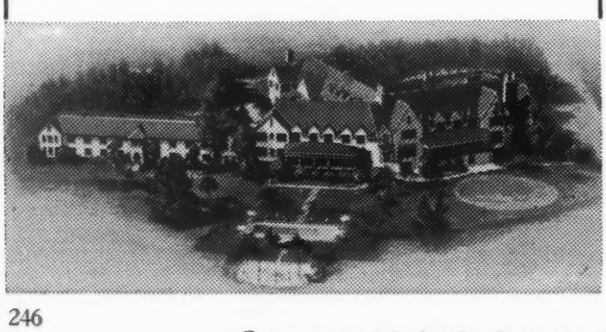

(Continued from Page 244)

the Michigan branch of the American Academy of Pediatrics. Representing the pediatricians of the state, Dr. W. C. C. Cole, of Detroit, Michigan branch chairman, wrote to Dr. Moyer: "I should like to recommend and urge that your department take appropriate action to make this therapeutic agent universally available."

LOBAR PNEUMONIA CASES AT NEW LOW WINTER LEVEL

Pneumonia in Michigan is dropping to new low monthly totals for the middle of the pneumonia season. Michigan Department of Health figures show that in January only 306 cases of lobar pneumonia were reported as compared with 390 in January last year and 500 to 900 cases for the month in former years.

Other forms of pneumonia were not reportable until 1939, making long-range comparison possible only for lobar pneumonia. Cases reported in mid-winter this year are only as many as have been reported in June and July of other years.

No explanation of the low level of pneumonia has been made. Both cases and deaths have declined since the 1938-39 season, but the decline in deaths in recent years is attributed chiefly to the effectiveness of serum and sulfonamide drug treatment. For the 1940-41 season, the lobar pneumonia deaths totaled 2,632. Formerly the deaths ran from 3,000 to 6,000 a season.

BULK OF POPULATION NOW NEAR CANCER CENTERS

The bulk of Michigan's population is now within reasonable distance of one of fourteen of the hospitals in the state approved by the American College of Surgeons for treating cancer.

Two more Michigan hospitals were provisionally approved in 1941—the James Decker Munson Hospital in Traverse City and the Alexander Blain Hospital in Detroit.

As yet the Upper Peninsula does not have a hospital approved by the American College of Surgeons for cancer treatment.

Cancer deaths reported in 1940 to the Michigan Department of Health totaled 6,236, the second successive year that the total has been more than 6,000.

POSTGRADUATE OBSTETRICS COURSE OFFERED IN MAY

Another two-week postgraduate course in obstetrics is offered for four physicians beginning May 18, 1942, at the University Hospital at Ann Arbor. It is under the combined sponsorship of

Say you saw it in the Journal of the Michigan State Medical Society

the University of Michigan Department of Postgraduate Medicine and the Michigan Department of Health. Applications should be sent now to Dr. Lillian R. Smith, director of the Bureau of Maternal and Child Health, Michigan Department of Health, Lansing. There is no fee for the course.

VENEREAL DISEASES STAFF EXPANDED

Dr. Henry G. Steinmetz, acting director of the Genesee County Health Department, has been named assistant director of the Division of Venereal Disease Control of the Michigan Department of Health.

The appointment brings up the Department's venereal disease staff to its former strength of two physicians. Dr. Steinmetz will spend most of his time in the field, particularly in military areas where the Department is coöperating in control measures.

Dr. Steinmetz was for six years a staff physician at the Logansport State Hospital at Logansport, Indiana, in charge of syphilis treatment. Later he was a health officer in Indiana and then took specialized training in venereal disease control.

The right of Connecticut physicians to disseminate birth control information to their patients may soon have its second State Supreme Court review in two years. Last March a single-handed attack on Connecticut's birth control ban was launched by Dr. Wilder Tileston, clinical professor of medicine at Yale University Medical School, who asked the Superior Court of New Haven county for a declaratory judgment on the question of his providing contraceptive information to three women under his care, saying that their lives would be jeopardized by pregnancy. Last month Superior Court Judge Earnest C. Simpson reserved the case for hearing before the Supreme Court of Errors. By this transfer, a Superior Court hearing and a subsequent appeal by the losing side to the Supreme Court has been avoided.

Abraham S. Ullman, state's attorney, was named as the defendant inasmuch as he would be called upon to prosecute Dr. Tileston in the event that the physician actually disseminated such birth control information in violation of existing state laws. Fred Trotta, city attorney of New Haven, is also a defendant. Judge Simpson's action in reserving the case to the Supreme Court followed a stipulation signed by counsel for both parties that they were in agreement with regard to the facts involved and that a legal determination of Dr. Tileston's rights under the statutes was all that remained to be determined.

In 1940 the Supreme Court upheld a law enacted in 1879 which forbade the use of contraceptive devices, but it ruled that in the case before it there was "no occasion to determine whether an implied exception might be recognized when 'pregnancy would jeopardize life'."

Dr. Tileston in reopening the controversy said he hoped to have the court's ruling broadened. He charged that denial of the right to advise his patients would be unconstitutional under both state and federal constitutions because it would abrogate the principles of liberty, security of person, privileges and immunities of citizens of the United States and deprive a person of "life without the process of law."

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✶ COUNTY AND PERSONAL ACTIVITIES ✶

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Muskegon—Thomas J. Kane, M.D., Secretary

Oceana—V. W. Jensen, M.D., Secretary

Sanilac—E. W. Blanchard, M.D., Secretary

The above County Medical Societies have certified 1942 dues for every member of their respective societies to be among the first 100 per cent paid up counties for 1942. Dues to the Michigan State Medical Society for 1942 are $12.00, payable through the county medical society secretary.

Two positions of "Child Guidance Clinic Director" are open with salary range from $5,520 to $6,720 per year. For full details re qualifications, duties, etc., write F. F. Tallman, M.D., Michigan Hospital Commission, City National Building, Lansing.

R. Philip Sheets, M.D., Medical Superintendent of Traverse City State Hospital, announces that Wm. H. Gallagher, M.D., joined his staff in January.

* * *

Robert J. Douglas, M.D., of Muskegon has been appointed editor of the Muskegon County Medical Society Bulletin. N. A. Fleishman, M.D., of Muskegon is the new Business Manager.

* * *

A. L. Benison, M.D., formerly of Edmore, Michigan, is with General MacArthur's forces in the Philippines, according to a report from Myron G. Becker, M.D., of Edmore

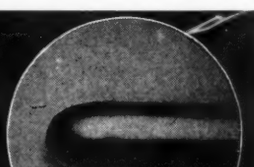
* * *

What are the requirements for a commission as First Lieutenant in the Army or as Lieutenant Jr. Grade in the Navy?

What is the pay rate and allowance of a Captain in the Army, or a Lieutenant in the Navy?

For answers see pages 181-182.

RADON SEEDS



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* * *

Washtenaw County has enlarged its monthly Bulletin to members. The Bulletin is set up in an attractive new format and includes a digest of the program of the last monthly program, announcement of coming meetings and other important information.

* * *

Burton R. Corbus, M.D., Grand Rapids, past president of the Michigan State Medical Society, has been appointed as the MSMS Representative to the Michigan Council on Adult Education. Doctor Corbus attended the meeting of the MCAE in the New Horace Rackham Foundation Building in Detroit on January 29.

* * *

The Michigan Chapter of the American College of Chest Physicians is planning to meet in Grand Rapids the day preceding the Michigan State Medical Society Convention, on Tuesday, September 22, 1942, according to Wm. Boyden Howes, M.D., Detroit, President of the Michigan chapter.

* * *

The American Association of Industrial Physicians and Surgeons, and the American Industrial Hygiene Association will hold their joint Annual Convention in Cincinnati April 13 to 17, 1942. A program is in preparation in which important medical and hygienic problems associated with the present huge task of American industry will be presented and discussed in clinics, lectures, symposia, and scientific exhibits.

* * *

A Conference of Medical Service Plans which are sponsored by medical societies was held in Chicago on February 14. At the Conference information was exchanged regarding the experience of the various plans. Arrangements were made to organize on a permanent basis for the purpose of coördinating the activities of the medical plans through the Bureau of Medical Economics of the American Medical Association, as recommended at the Cleveland meeting of the AMA House of Delegates. The results of this Conference will be published in a future issue of THE MSMS JOURNAL.

* * *

A list of military members, as certified by county medical society secretaries, will be published in the April, 1942, JOURNAL OF THE MICHIGAN STATE MEDICAL SOCIETY. This roster of medical members of the county and state medical societies in the armed forces of the United States will include their military addresses, wherever possible.

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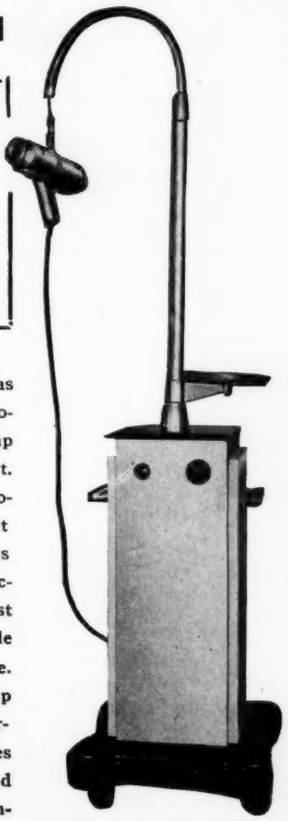

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"Treatment of Pneumonia," a pamphlet recommended to the physicians of Michigan by the Michigan State Medical Society, has just been printed by the Michigan Department of Health and is available to members of the State Society. The booklet of 30 pages gives complete coverage on Prevention, General Management, Chemotherapy, and Serotherapy. For a copy, contact your County Society Secretary.

* * *

H. Allen Moyer, M.D., State Health Commissioner, and C. C. Young, Dr.P.H., in charge of the State Health Laboratories, advise that there is no truth in the rumors being circulated that the Michigan Department of Health is considering the discontinuance of the distribution of biological products for the control of communicable diseases. These products will continue to be manufactured and distributed by the Michigan Department of Health, as in the past.

* * *

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The above ten firms were exhibitors at the 1941 Convention of the Michigan State Medical Society and helped make possible for your enjoyment one of the outstanding state medical meetings in the country. Remember *your friends* when you have need of equipment, medical supplies, appliances or service.

* * *

Michigan authors of articles in *The Journal of the American Medical Association* during the month of January were as follows: issue of January 17: H. C. Jackson, M.D., and Frederick A. Coller, M.D., Ann Arbor, on "Sulfanilamide in Peritoneum"; issue of January 24: Louis J. Hirschman, M.D., Detroit on "The Colostomy Question"; issue of January 31: C. C. Birkelo, M.D., Detroit on "Roentgen Diagnosis of the Primary Tuberculous Infection."

Say you saw it in the Journal of the Michigan State Medical Society

The Second American Congress on Obstetrics and Gynecology will be held in St. Louis, April 6 to 10, 1942. The headquarters hotel will be the Jefferson Hotel; all meetings, general sessions and exhibits will be held in the Municipal Auditorium. Fred L. Adair, M.D., Chicago is General Chairman of the Congress; Ralph E. Campbell, M.D., Madison, Wisconsin, Vice Chairman; Jean Paul Pratt, M.D., Detroit, Secretary; and Frederick H. Falls, M.D., Chicago, Treasurer.

* * *

Harold A. Furlong, Lt. Colonel, M.C., State Medical Officer of the Selective Service System, Michigan Headquarters, reports that 1,967 Michigan physicians and dentists are engaged in the examination of selectees as follows:

Local Board Examining Physicians (including dentists)	1,517
Medical Advisory Board members (including dentists)	431
Doctors of Appeal Boards	19
Total	1,967

* * *

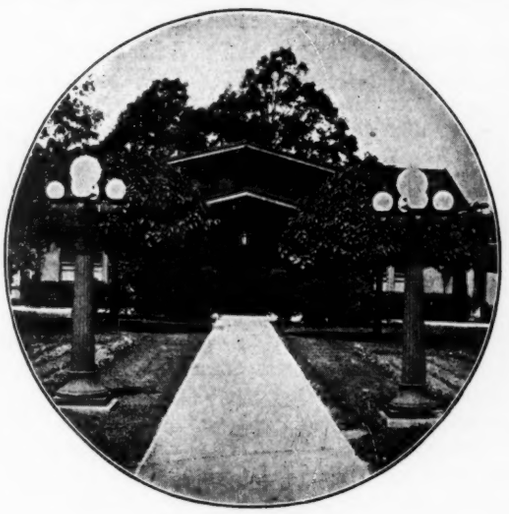
Jay R. Venema, M.D., of Grand Rapids has been awarded the Edward and Susan Lowe Fellowship of Butterworth Hospital, Grand Rapids. The Fellowship carries with it a cash prize of $500 to be expended, within twelve months after receipt, in defraying the expense of securing postgraduate clinical or similar instruction and experience outside of Grand Rapids. The award is made on the basis of the degree to which the candidate has achieved increased proficiency in diagnosis and in medical or surgical treatment; the degree to which he has coöperated with other members of the medical staff and with the executive management and board of trustees; the degree of effort and willingness evinced by him to share with other members of the staff his knowledge of the science and practice of medicine and surgery.

* * *

The American College of Surgeons' thirty-second Clinical Congress will be held in Chicago, October 19 to 23, instead of Los Angeles as originally planned, due to the war. Headquarters will be at the Stevens Hotel. The twenty-fifth annual Hospital Standardization Conference sponsored by the College will be held simultaneously. The programs of both meetings will be based chiefly on wartime activities as they

CORRECTION!

The name of George W. Williamson, M.D., of Dundee was erroneously listed with those deceased in 1941 in the Secretary's Report to the Annual Meeting of The Council. Our apologies to Doctor Williamson!



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* * *

The Fifth American Psychiatric Association Postgraduate Institute for state hospital men and other physicians interested in psychiatry, will be held at Missouri State Hospital, St. Joseph, Missouri, March 23 to April 4, 1942, according to an announcement just received from Franklin G. Ebaugh, M.D., Chairman of the Committee on Psychiatry in Medical Education of the American Psychiatric Association. For further information and complete program contact Doctor Ebaugh, Colorado Psychopathic Hospital, Denver, Colorado.

* * *

The Staff of St. Mary's Hospital, Detroit, held its annual banquet on January 21, 1942, attended by 92 members. Guests of honor were Dean Edgar Norris of Wayne University College of Medicine and C. E. Simpson, M.D., President of the Wayne County Medical Society. The principal speaker of the evening was Mr. Lee White of the *Detroit News* who spoke on "What Can One Believe."

Armand G. Kersten, M.D., was elected Chief of Staff; Euclid V. Joinville, M.D., Vice Chief, and Hugh Mahoney, M.D., Secretary-Treasurer. Walter Wilson, Sr., M.D., is the retiring Chief of Staff.

Grover C. Penberthy, M.D., and C. N. Weller, M.D., Detroit, presented a program on "Burns" illustrated by slides at the Clinical Pathological Conference held at St. Mary's Hospital, Detroit on February 5, 1942.

* * *

Physicians are urgently needed in civil positions at the Panama Canal, one of the nation's most vital defense areas. The U. S. Civil Service Commission has just announced an examination to secure physicians for these important positions, the entrance salary of which is $4,000 per year, plus free transportation by boat or plane from port of embarkation. Applications will be accepted by the Commission in Washington, D. C., until further notice. There is no written test.

Applicants must have been graduated from a Class A medical school with degree of M.D., subsequent to May 1, 1920, and have at least one year of experience in a hospital. Applicants must not have passed their fiftieth birthday. Full information is given in the announcements which may be obtained with application forms, at any first- or second-class post office, or from the U. S. Civil Service Commission, Washington, D. C.

* * *

John S. Lambie, M.D., in the *Bulletin of the Oakland County Medical Society,* presents very interesting statistics on the ages of physicians of Oakland County, as follows: 21 to 29 years, 8 physicians; 30 to 39 years, 43 physicians; 40

Say you saw it in the Journal of the Michigan State Medical Society

to 49 years, 52 physicians; 50 to 59 years, 11 physicians; 60 to 69 years, 11 physicians.

Schools of graduation of these physicians include 40 from the University of Michigan, 18 from Wayne University; 17 from Detroit College of Medicine and Surgery; 5 from the University of Toronto; 3 each from Creighton, Loyola and Marquette; 4 from Rush; 2 each from Iowa, Minnesota, Northwestern, Washington University, Georgetown, Michigan College of Medicine and Surgery, McGill, and the University of Western Ontario; and one each from Nebraska, Kansas, Ohio State, Western Reserve, Louisville, George Washington, Saginaw Valley, Howard, Vermont, Maryland, Tufts, Jefferson, University of Arkansas, University of Copenhagen, Meharry, and the College of Medical Evangelists of Los Angeles.

The Bulletin of the Kent County Medical Society presents similiar information, with a different break-down of the age groups of physicians in that county:

Kent County—255 members. Ages as of December 31, 1941: 36 and under: 63 members. Over 36 and under 45: 56 members. 44 and under: 119 members. 45 to 60: 80 members. 61 and over: 56 members.

* * *

Pre-medical and medical students may now obtain appointments as Ensigns in the U. S. Naval Reserve according to announcement just received from Rear Admiral Ross T. McIntyre, Surgeon General, U. S. Navy. Students who are acceptable will be given provisional commissions as Ensigns, and it is the policy of the Bureau of Medicine and Surgery not to nominate such officers for active duty until after they have completed their prescribed medical studies and shall have served one year's satisfactory internship in a civilian hospital accredited for intern training, or shall have been accepted as Acting Assistant Surgeon in the Navy for intern training. Upon Graduation, and notification by the Dean to the Bureau, commissions as Lieutenant (junior grade) will be issued, and after serving their internship in nonnaval hospitals, they will be nominated for active duty. Application forms may be obtained from the Dean's office or from the Bureau of Medicine and Surgery Navy Department, Washington, D. C., or from the Commandant of the Ninth Naval District, Great Lakes, Illinois.

* * *

Michigan Pathological Society

The February meeting of the Michigan Pathological Society was held in Lansing on February 14, as a joint meeting with the Detroit Branch of the American Urological Society. There were 19 members of the Michigan Pathological Society and 35 urologists and guests in attendance.

The afternoon session consisted of pathological

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and pyelographic demonstrations at the Sparrow Hospital. The dinner and evening scientific meeting were held at the Olds Hotel.

The subject for the meeting was "Renal Pathology." Cases were presented by Drs. O. A. Brines, C. G. Weltman, D. C. Beaver, E. F. Ducey, G. Sewell, O. W. Lohr, R. Breakey, C. E. Black, Mark E. Maun, Martha Madsen and J. H. Ahronheim.

The next meeting will be held at St. Mary's Hospital, Grand Rapids, on April 11, 1942.

* * *

American Board of Obstetrics and Gynecology

The general oral and pathological examinations (Part II) for all candidates (Groups A and B) will be conducted at Atlantic City, N. J., by the entire Board, from Wednesday, June 3, through Tuesday, June 9, 1942, prior to the opening of the annual meeting of the American Medical Association.

Application for admission to Group A, Part II, examinations must be on file in the Secretary's Office not later than March 1, 1942. It will greatly facilitate the work of the Board if applications are filed as far as possible in advance of the closing date for their receipt.

Formal notice of the time and place of these examinations will be sent each candidate several weeks in advance of the examination dates.

Candidates for *reëxamination* in Part II must make written application to the Secretary's Office before April 15, 1942.

As previously announced in the Board booklet, this fiscal year (1941-1942) of the Board marks the close of the two groups of classification of applicants for examination. Thereafter, the Board will have only one classification of candidates, and all will be required to take the Part I examinations.

The Board requests that all prospective candidates who plan to submit applications in the near future request and use the new application form which has this year been inaugurated by the Board. The Secretary will be glad to furnish these forms upon request, together with information regarding Board requirements. Address Dr. Paul Titus, Secretary, 1015 Highland Building, Pittsburgh (6), Pennsylvania.

* * *

Rationed Tires and Physicians

Beginning January 5, 1942, automobile tires and tubes were rationed "only to persons performing a function essential to the war effort or to the health and welfare of the nation as defined in the rationing order issued by the Office of

Production Management, and signed by the President." Among those vehicles designated for which tires may be obtained are "those which are operated by physicians, surgeons, visiting nurses, or veterinaries, and which are used principally for professional services." Tires may also be rationed to ambulances, certain busses and trucks.

The Office of Price Administration, which has charge of the tire rationing program for the nation, interprets the eligibility of physicans' automobiles as follows: "The board shall issue certificates for vehicles in this class only to doctors, nurses and veterinaries, whose professional practice is to make regular calls outside their offices and who use automobiles to make their professional calls. No certificate shall be issued unless the doctor, nurse or veterinary applying shows that the particular car on which the tire or tube is to be mounted is actually used for professional calls and is used principally for that purpose."

Application forms for new tires are available at each approved tire dealer or garage, post office, police station and the office of the local Tire Rationing Board (county or city clerk). Before submitting formal application, however, the tires must be inspected by one of the approved dealers or garages authorized to inspect and report on the condition of the applicant's tires. If the authorized inspector finds that the tire or tires which the applicant desires to replace are unsafe, cannot be repaired, reconditioned, or retreaded, the inspector will so certify on the application form.

The application should then be taken to the local Tire Rationing Board for consideration. If the Board finds the applicant falls within the eligible classification, it may issue a certificate for the purchase of the desired tire within the quota of tires assigned to the Board. The tire must be mounted on the physician's car. Each Board will have a monthly quota assigned of which one quarter is available each week. Excess allotments will carry over from week to week, but not from month to month. As soon as the stated allotment has been used, no more tires will be available until the next week.—*Extract From Instructions For Rationing, OPA*

HALF AN ARMY DIVISION LOST

It is interesting to speculate on the number of potential soldiers, sailors and fliers that were killed by automobile accidents in 1941, as our nation was girding itself for war. Of the 30,720 persons killed in the age group fifteen to sixty-four, more than half were males and of these, at least half would be of military age. That means half an army division exterminated, without the expenditure of one enemy bullet!—*The Wreckord.*

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ARTHRITIS IN MODERN PRACTICE. By Otto Steinbrocker, B.S., M.D., Assistant Attending Physician and Chief, Arthritis Clinic, Bellevue Hospital, Fourth Medical Division, New York City. With Chapters on Painful Feet, Posture and Exercises, Splints and Supports, Manipulative Treatment and Operations and Surgical Procedures by John G. Kuhns, A.B., M.D., F.A.C.S., Chief of the Orthopedic and Surgical Service, Robert Breck Brigham Hospital; Assistant Visiting Orthopedic Surgeon, Boston Children's Hospital. 321 illustrations. Philadelphia and London: W. B. Saunders Company, 1941. Price: $8.00.

The author embodies in readable and practical form the readily available source of commonly accepted diagnostic and therapeutic measures. It is an exceptionally practical book, extensively illustrated and very interesting. The bibliography is profuse and the typography is excellent. It is recommended to the general practitioner.

* * *

HEART DISEASES. A Handbook for Students and Practitioners. By Marion Ellsworth Anderson, A.B., M.D., Clinton, Iowa. Clinton, Iowa: Allen Printing Company, 1941. Price: $1.00.

This pocket manual is based on a study of many textbooks and monographs as well as every writing on heart disease that has appeared in the *A.M.A. Journal.* To this the author has added his own experience in his practice. It is written from a clinical aspect and contains many of the author's personal conceptions. The typography is fair. It is not well illustrated but its personal viewpoint is refreshing.

* * *

CLARA BARTON. Daughter of Destiny. By Blanche Colton Williams. 31 illustrations. Philadelphia: J. B. Lippincott Company, 1941. Price: $3.50.

For the medical lover of biographies, and who is not, "Clara Barton, Daughter of Destiny" has a particular appeal. The author has found many previously unknown diaries and journals which more completely tell the thrilling, romantic history of Clara Barton and the American Red Cross. It is excitingly written, holds the added ingredient of authenticity. It is really worth reading.

* * *

SYNOPSIS OF ALLERGY. By Harry L. Alexander, A.B., M.D., Professor of Clinical Medicine, Washington University School of Medicine, St. Louis; Editor of The Journal of Allergy. Illustrated. St. Louis: The C. V. Mosby Company, 1941. Price: $3.00.

Here is one of the volumes in the series of pocket-sized synopses which are published by Mosby. It presents the subject of Allergy in terms of present day thought. The general considerations are simply but completely presented with the greatest emphasis being placed upon bronchial asthma and hay fever. The appendix is a very interesting and practical chapter which provides considerable usable information

for any interested physician. The typography is excellent.

* * *

THE TOXEMIAS OF PREGNANCY. By William J. Dieckmann, M.D., Associate Professor of Obstetrics and Gynecology, The University of Chicago; Attending Obstetrician, The Chicago Lying-in Hospital and Dispensary; Attending Gynecologist, Albert Merrit Billings Memorial Hospital of the University of Chicago; Associate Editor of the American Journal of Obstetrics and Gynecology; Co-chairman of the Conference on Eclampsia, United States Department of Labor, Children's Bureau, 1941. With fifty text illustrations and three color plates. St. Louis: The C. V. Mosby Company, 1941. Price: $7.50.

This is a monograph to acquaint the obstetrician with some of the recent contributions on physiology pertaining to obstetrics and to acquaint the investigator, untrained in obstetrics, with some of the physiology and pathology of obstetrics. The material is presented in detail but is well organized and there is much of practical value here. There are many tables, few illustrations, and the typography is excellent. It is recommended to those especially interested in obstetrics.

* * *

ALLERGY IN CLINICAL PRACTICE. By Staff-Members of the Cleveland Clinic. Under the Direction of Russell L. Laden, M.D., F.A.C.P., Chief of the Medical Division. Edited by J. Warrick Thomas, M.D., F.A.C.P., Chief of the Section on Allergy. 92 illustrations including 14 subjects in color. Philadelphia: J. B. Lippincott Company, 1941. Price: $5.00.

The staff at Cleveland Clinic felt that the discussion of allergy by a specialist in that field might be too inclusive. They felt that the popular evaluation of allergy as a factor in the production of disease is best made in a large clinic. Except for the inclusion of many case records the volume is exceptionally well written and arranged, excellently illustrated and the typography is excellent. It is recommended to the general practitioner.

An advance copy of "Clara Barton: Daughter of Destiny" (Lippincott) sold for thirty dollars, the largest sum paid for a contemporary book, at the recent Book Fair at Hunter College in New York. The Fair was held in the interests of the Blanche Colton Williams Fellowship, established by the Department of English in honor of its former head, the author of "Clara Barton." The Fair was held at the Art Library of the College, under the direction of a committee of faculty and students. Speakers included J. Donald Adams of the *New York Times*, A. M. Sullivan, President of the Poetry Society of America, Amy Loveman of the *Saturday Review of Literature*, Babette Deutsch and Arthur Guiterman.

IN MEMORIAM

Emerson Cooper of Rockwood was born in Melbourne, Ontario April 21, 1876, and was graduated from the Toronto Medical College in 1900. He started practicing in Carleton and continued for 19 years. Later he returned to Rockwood and took up his practice, continuing until 1939. Dr. Cooper died, after a long illness, January 21, 1942.

* * *

Arnold T. Droste of Dearborn was born in 1893 in Westphalia, Michigan, and was graduated from Wayne University College of Medicine in 1924. He had practiced in the vicinity of Detroit for 18 years. Dr. Droste died after a brief illness, January 2, 1942.

* * *

Fred W. Freeman of Saginaw was born in 1857 in Windsor, New York, and was graduated from the University of Michigan Medical School in 1882. With his family he came to Saginaw in 1877, where his father, the late James W. Freeman, M.D., established his practice. Doctor Freeman was elected to Emeritus Membership in the Michigan State Medical Society on September 19, 1938. He died after an illness of two years which followed an automobile accident, January 21, 1942.

* * *

Frank J. A. MacDonell of Detroit was born August 21, 1874 in Chatham, Ontario and was graduated from Wayne University Medical School in 1897. At the completion of his internship at St. Mary's Hospital he took up post-graduate work in New York City, until 1900, at which time he began private practice in Detroit. He was a member of the Staff of The House of Providence when that institution was located at St. Antoine and Elizabeth Streets. In 1911, when that institution in its new location at West Grand Boulevard and Fourteenth Avenue, became Providence Hospital, Dr. MacDonell continued as a staff member in the Department of Obstetrics. Dr. MacDonell died January 15, 1942.

* * *

Colin G. Robertson of Sandusky was born May 15, 1875 in Hawkesbury, Ontario, and was graduated from McGill University, Montreal in 1901 and from the College of Physicians and Surgeons of Toronto in 1902. He practiced in Van Kleek, Ontario before coming to Sandusky where he practiced thirty-seven years. Dr. Robertson died December 19, 1941.

* * *

Lilla B. Wood of Reed City was born in Ann Arbor, Michigan, in 1867, and was grad-

uated from the Saginaw Valley Medical School in 1901. Following graduation, she practised at Bay View. In 1902 and 1903, she located in Hawkins and Paris. Later, she practiced in Detroit and remained there twenty years. In the past two years she has lived in Reed City, where she died November 26, 1941, following a short illness.

MODERN MEDICINE'S PROGRAM TO PAY FOR THE WAR

Modern medicine says that the nation need not worry about post-war debts, according to Martin Stevers, writing in the January issue of *Tomorrow*. "The assumption that the productivity of our people will remain about as it is," writes Mr. Stevers, "is completely unwarranted. If medical science is given its head in public health, there will be a burst of prosperity as great as the world got from steam factories, steam railroads, and steamships after the Napoleonic wars. The race can be given one of the biggest lifts it has had in all history with laboratory products—hormones, vitamins and allied products."

Professor Russell M. Wilder, chief of the Mayo Foundation's Department of Medicine and chairman of the National Research Council's committee on nutrition, is one of the competent authorities who share Mr. Stever's conviction. "Professor Wilder starts from the proposition," writes Mr. Stevers in the article, "Modern Medicine's Program to Pay for the War," "that at least two-thirds of our people, rich as well as poor, suffer from malnutrition as a result of eating devitalized food. His remedy, however, is as simple as the damage has been serious. He sees no need for tackling the almost hopeless task of trying to change food tastes and habits. Neither need the nation undertake the economically staggering task of trying to provide a vastly enriched diet for everybody." Professor Wilder says, "Were all edible fats to be fortified with vitamins A and D to reasonable limits, and if little more than an ounce of the solids of milk or whey could be incorporated in everybody's diet through milk sugar . . . malnutrition should vanish as a public problem, and with it undoubtedly would go much other disease."

Mr. Stevers, who is Science Editor of Compton's Encyclopedia, adds that this statement is more than conservative, in view of the possibilities. "The cost of preventable disease and death in the United States has been estimated at three and one-half billion dollars a year—enough to care for a national debt of one hundred billion dollars. Certainly nothing could help more to save a large fraction of this sum than a general upbuilding of health through sound nutrition.

"Altogether, then, medicine cannot be accused of pipe-dreaming when it foresees a new era of healthfulness ahead. Its program is logically complete, and moreover, it meets the most important test of all, practicability in the troubled times to come."

This new health program does not call, Mr. Stevens points out, as did older health programs, for expenditure of billions to enlarge the national diet, create vastly expanded hospital and sanitarium facilities, and maintain a tremendous medical personnel to provide prolonged treatment and supervisory care. It can be carried through, quite largely with laboratory products—hormones, vitamins, and drugs—which can be produced and used on a mass basis, once demand develops.

"Because of this simplicity, the program should pay for itself as it goes, through reduced disease, while producing a far better younger generation as a free dividend to carry the burdens of the future. And is there any other proposal whatever for dealing with the aftermath of war, of which this can be said?"

READING NOTICES

VITAMIN B COMPLEX LITERATURE SURVEYED IN NEW ABSTRACT BOOK

Published as a convenience to physicians and others interested in the subject, the new Lederle Vitamin B Complex Abstract Book provides in compact form a topical survey of accomplishments in the development of Vitamin B components, and their application in a wide range of conditions.

Because the literature on the subject is already too extensive to be covered in full, this sixty-two page booklet presents in abstract form only the most salient of recent articles from leading medical journals and other sources. For convenience the studies pertaining to various diseases and Vitamin B Complex deficiencies are arranged alphabetically. The articles have been sufficiently condensed so that each seldom occupies more than a single page. Suggested references are included with each as a guide to more extensive reading and study.

This booklet, "Abstracts Selected from Published Articles on Vitamin B Complex and its Components" is being distributed to physicians and is available on request to Lederle Laboratories, 30 Rockefeller Plaza, New York, New York.

MODERN METHODS OF IMMUNIZATION

Physicians who are concerned with the immunization of infants and children have as their goal the use of materials which will not sensitize the patient and the utilization of routes of administration that cause least discomfort. Definite assistance toward these objectives is provided by use of combined antigens in the opinion of a recent observer. *(J. Florida M.A.,* 28:330. 1942). The author has employed Combined Diphtheria Toxoid-Tetanus Toxoid, Alum Precipitated (Lilly) for the last three years without any untoward reactions.

The combination of diphtheria and tetanus toxoids is effected by mixing suitable amounts of the respective toxins which have been detoxified by the use of formaldehyde, and precipitating from this combination with alum the diphtheria and tetanus toxoids. The individual toxoids are tested for toxicity prior to mixing, and the combined alum precipitated toxoid is tested for toxicity after precipitation. Potency is determined by injecting guinea pigs with a human dose. After four weeks the blood serums of these animals must show at least 2 units of

diphtheria antitoxin and 2 units of tetanus antitoxin per cubic centimeter of blood serum.

Should exposure to either diphtheria or tetanus occur before immunization against each disease is completed, the usual procedures for immediate protection of unimmunized subjects should be considered. The combined toxoid is not for treatment, it is a prophylactic measure of active immunization against diphtheria and tetanus.

ANY PHYSICIAN MAY EXHIBIT "WHEN BOBBY GOES TO SCHOOL" TO THE PUBLIC

Under the rules laid down by the American Academy of Pediatrics, their new educational-to-the-public film "When Bobby Goes to School" may be exhibited to the public by any licensed physician in the United States.

All that is required is that he obtain the endorsement by any officer of his county medical society. Endorsement blanks for this purpose may be obtained on application to the distributor, Mead Johnson & Company, Evansville, Indiana.

Such endorsement, however, is not required for showings by licensed physicians to medical groups for the purpose of familiarizing them with the message of the film.

"When Bobby Goes to School" is a 16-mm. sound film, free from advertising, dealing with the health appraisal of the school child, and may be borrowed by physicians without charge or obligation on application to the distributor, Mead Johnson & Company, Evansville, Indiana.

SQUIBB INTRODUCES PRODUCT FOR SIMULTANEOUS IMMUNIZATION AGAINST DIPHTHERIA AND WHOOPING COUGH

The first preparation for simultaneous immunization against diphtheria and whooping cough to be made available commercially in this country is now offered by E. R. Squibb & Sons, New York, in Diphtheria Toxoid Alum Precipitated—Whooping Cough Vaccine Combined Squibb. Each 1 c.c. of the combination product contains a full immunizing dose of Diphtheria Toxoid Alum Precipitated and 10,000 million killed Bacillus (hemophilus) pertussis.

This new product possesses the advantage of convenience and economy, and in addition, with a combined product of this type, the antibody responses of the two antigens tend to complement each other. The reactions to the combined antigens are apparently no more frequent or severe than those following the use of diphtheria toxoid alum precipitated.

To be on the safe side, it is suggested for the present that three or four injections of 1 c.c. each of Diphtheria Toxoid Alum Precipitated—Whooping Cough Vaccine Combined Squibb—be given at monthly intervals. This will confer a high degree of immunity to diphtheria and should afford adequate protection against whooping cough. Immunization is recommended for all children over six months of age.

NO INCREASE IN RATES—NO RESTRICTIONS FOR THOSE IN ARMED SERVICES

In these days when we are all confronted with a question of shortages in various commodities and an increase in the price of those obtainable, we are happy to announce that not only will we continue to carry our policyholders at no increase in the cost of their accident and health insurance but we adopted a resolution to the effect that there shall be no restriction under our policies by reason of Army, Navy or Marine Service and this is irrespective of where such Service may take the policyholder.—Physicians Casualty Association of Omaha.

THE NAKED TRUTH

What has group medicine to offer the incurable chronics of various types and the maimed, deformed, and paralyzed derelicts floating pathetically on a storm-tossed sea of hopeless trouble? Are they to be given the once over? What about Grandma Jones and Uncle Ed who are sitting by the fireside or confined to bed in a dismal back room, waiting timidly but expectantly for the arrival of the golden chariot to bear them aloft? Who is going to prescribe and supervise the pain-relieving measures necessary to their comfort, while an inoperable cancer slowly saps their life? Will the whole technical squad of experts hurry out en masse every time an anxious attendant rings in a three-three alarm? I wonder!

Group medicine enthusiasts must not forget, either, that a lay person is prone to regard his doctor as a machine—a sort of human taxicab—of which he may demand quick service at any hour to carry him or one of his family through some illness, either fancied or real, so long as he pays the shot. What such an individual desires is excellent service and not phoney excuses. He imperatively wants old doc to hurry to his relief as though someone had caught fire from a sunburn, and Upandatem, M.D., was a chemical hose company turning out on a still alarm to subdue the conflagration. If group medicine ever arrives, the Lord have mercy on the impatient soul. What he will get will be reversed—excuses and not much service—and I don't mean maybe.—From "Group Medicine Answered," Floyd Burrows, M.D., *New York State Medical Journal,* reprinted in *Connecticut State Medical Journal,* December, 1941.

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MICHIGAN MEDICAL SERVICE

Conference on Medical Service Plans

The first Conference on Medical Service Plans was held in Chicago on February 14, 1942, at the headquarters of the American Medical Association and the Palmer House. A total of sixty-four persons were present, including representatives from operating and proposed medical service plans in seventeen states and officers of state and county medical societies.

Dr. Olin West, Secretary and General Manager of the American Medical Association, welcomed the representatives and stated: "You are distinctly a part of a great movement that is essential to the welfare of the people of this country and it is highly desirable that you should get together to exchange information and opinions in order to arrive at a basic understanding of the problems involved."

Mr. J. D. Laux of Michigan Medical Service, who was elected Chairman of the Conference, indicated that interest in some form of prepayment for medical services has been moving along three well-defined fronts: (1) group clinic or consumer plans such as the Ross-Loos Clinic or the Transport Workers Medical Plan, of which there are seventeen such plans in operation with a total enrollment of 100,000 persons; (2) employe-employer mutual benefit association (300 in operation) and the commercial insurance company plans (at least 250) providing cash indemnity benefits totaling $365,000,000 annually; and (3) non-profit medical service plans sponsored by medical societies, of which there are thirty-three plans in operation in nine states with an enrollment in excess of 750,000 persons. The non-profit medical society sponsored programs are developing most rapidly and give the best promise of contributing toward a better distribution of medical service.

The entire day was devoted to consideration of the basic principles and major problems involved in medical service and limited surgical benefit programs sponsored by medical societies. The following are some particularly pertinent points brought out in the discussion:

- Contract practice plans limiting service to a small number of physicians cannot provide a satisfactory service for an entire community. Non-profit community-wide or state-wide service plans are the proper type of organization for prepayment of medical services.

The statement that voluntary plans lead to compulsory insurance applies to the chaotic situation created by a multiplicity of lay controlled or commercial plans not to medically sponsored community programs.

- In medical society sponsored programs, the contribution of the profession is the offering of services without additional charge to persons in the under-income group. Under a plan providing cash indemnity, the only thing the medical profession furnishes—service protection to the individual—would be taken away.
- Experiments in the full coverage type of medical service plan are being undertaken to determine the effect of such plans on the private practice of medicine; how such plans affect the physician-patient relationship; what problems arise in connection with the practice of specialists; the difference between urban, rural, and metropolitan practice; and all general problems relating to medical care.
- A differential arrangement for specialists is a problem which one medical service plan treats in the following manner: When a subscriber uses a specialist as his family physician, the specialist receives general practitioner fees for such service. However, in the event the subscriber is referred to a specialist by his family physician for special services, an increased fee is paid. To be eligible for increased fees, the specialist must confine himself strictly to his specialty.
- Enrollment based on individual physical examinations does not furnish as good selection as group enrollment.
- The desirability of establishing somewhat uniform or model legislation for medical service plans was emphasized.
- The question of the extent of joint operations with hospital service plans and the appropriate basis for coöperation led to the establishment of a committee to meet with a committee from the hospital service plans.
- It is of utmost importance to establish a centralized agency for the collection and dissemination of information. R. G. Leland, M.D., Director of the Bureau of Medical Economics of the American Medical Association, outlined a program of coördination through establishment of a glossary of terminology, an organizational outline of the plans, and a composite tabulation of financial and statistical reports.

The Conference concluded with the appointment of a committee to determine the best method of establishment of a permanent organization of medical service plans throughout the country.

✶ HALF A CENTURY AGO ✶

NOTES ON THE APPENDIX VERMIFORMIS: ANATOMICAL AND CLINICAL*

GEORGE DOCK, M.D.
Ann Arbor, Michigan

No explanation is necessary for the selection of the subject I bring before you. The importance of the subject may be seen by a perusal of current medical literature, in the number of articles and reports of society proceedings bearing on it.

Some apology may be due you for the form in which the matter is presented. I advance no theories and bring out no conclusions. But this is rendered necessary by the nature of the subject. The typical cases of appendix disease are well known to all, promptly diagnosed, and treated for the most part rationally. But we are becoming familiar with the fact that in a considerable proportion of cases of appendix disease the symptoms are vague and that owing to this lives are lost even to the most progressive. With the increase in knowledge, these cases are becoming rarer, but are common enough for all who have opportunities for making autopsies to see examples all too frequently.

For some years I have endeavored to gain some light by a study of the anatomical relations of the appendix. Although the number of examinations reported is small, it must be remembered that some of the most useful studies of the appendix have been made on small groups of cases. One reason for reporting the observations at this time is that opportunities for carrying on the observations are wanting.

In the course of the observations, I met with a number of cases presenting interesting clinical points. These I shall mention briefly.

I pass over a number of cases of disease of the appendix or its vicinity treated as such, either internally or by surgical means, and in which, by their course, or the result of operation, one or other of the common forms of appendix disease was made out.

Most of the observations were made in Galveston, Texas, in hospital and private practice. The number of bodies examined was eighty.

A large majority were beyond the age at which appendix disease usually develops.

Seven were below the age of twenty-one, i.e.: two of three years, one each of five, fourteen, sixteen, eighteen, twenty; between twenty-one and twenty-five, five; twenty-six to thirty, nine; thirty-one to thirty-five, seven; thirty-six to forty, nine; forty-one to forty-five, ten; forty-six to fifty, ten; fifty-one to fifty-six, five; fifty-six to sixty, nine; sixty-one to sixty-five, three; sixty-six to seventy, one; seventy-one to seventy-five, four; very old, age unknown, one. Sixty-five were white, fourteen negro, one Mexican. There were seventy males and ten females.

The peculiar conditions as to age and sex are common in hospitals in the south.

The position of the appendix was carefully noted before any of the organs were moved. In forty-seven cases it was in that called normal—lying among the folds of the small intestines, or behind the mesentery, and pointing towards the position of the spleen.

In eight cases it lay in the right iliac fossa. In eight cases it lay near this position, noted as in the vicinity of the right sacro-iliac articulation, or the lumbo-sacral articulation. In four cases it lay to the left of the ascending colon and running up towards the liver; in four to the right of and close to the ascending colon.

In six cases it was quite in the true pelvis. In one of these, in a case of chronic dysentery, the cæcum was adherent to the pelvis.

In one case, the appendix ran horizontally back from a cæcum rather turned towards the exterior abdominal wall.

In one, the appendix, four inches long, ran to the left straight across from the cæcum, ending among the coils of small intestines.

In one, it ran along the iliac vessels to the right pubic spine.

The length of the organ was not noted in every

*Presented at the Twenty-Seventh Annual Meeting of the Michigan State Medical Society, Flint, May, 1892.

case, but always when longer or shorter than a medium of 3 to 4 inches. In two cases it measured only 1 inch, one in a white male of thirty, the other in a white male of fifty-one. The largest measured seven inches, in a white male of thirty-five. The average length in negroes is probably slightly greater than in whites—4 inches in my cases, but great variations were not so common.

The diameter showed no great variation from an average of 5 mm. In a case of tuberculous ulceration of the intestines, with tuberculous ulcers in the appendix, that organ had a diameter of 15 mm.

Pathological Conditions

No attempt was made to look for microscopical changes in the absence of manifest lesions, although an experience recorded in a case operated on by Dr. Hadra (Medical Record, Vol. I, 1890, p. 269), makes it probable that such changes could often be found.

In five cases there was evidence of disease in the form of adhesions of the peritoneum of the appendix to adjacent structures, with greater lesions.

Case 1. (Case 21) Man of twenty-five years, died of typhoid fever. Appendix in the right iliac fossa adherent to the cæcum for three inches, one inch free. It contained no Peyer's patches; the lymph nodules were swollen, but no evidence of disease in the cæcum. The adhesions were firm and smooth, apparently old.

Case 2 should not, probably, be included. The subject (Case 28) was a man dead of phthisis, with lesions of the ileum and small (tuberculous) ulcers in the mucous membrane of the appendix. The appendix, the size of the little finger, was closely adherent to the left side of the colon. There was beginning inflammation over some of the ulcers in the appendix, but the adhesions were evidently of long duration.

Case 3.—Croupous pneumonia in a man of sixty years, (Case 46). Appendix 6 inches long, adherent in its whole length to the peritoneum to the left of the ascending colon. There was no other evidence of appendix, or cæcal disease.

Case 4.—In the body of a negro of about fifty, dead of chronic nephritis (contracted kidney, hypertrophy of the left ventricle and theroma), the appendix, 5 inches long, was closely adherent to the peritoneum, along the right side of the ascending colon. The adhesions were so firm, close, and smooth that the organ could only be found with some difficulty, after raising the cæcum and loosening some of the adhesions. The obscurity was increased by the opacity of the peritoneum (ascites).

Case 5.—Man of sixty-three, dead of pyæmia, following extensive crushing, the appendix, 5 inches long, lay close to the right side of the ascending colon, attached by thin but firm adhesions. No other peritoneal lesion.

In a case of typhoid fever, fatal in the third week, there was extensive redness and swelling of the serosa of the appendix, along with swelling of mucous membrane and solitary nodules.

Foreign Bodies

In no case was a true foreign body found: that is, one of external origin.

In one case (Case 57), a man of twenty-three, dead of pernicious malarial fever, without history of other disease, a fæcal concretion was found. The appendix, 4 inches long and as thick as a lead pencil, ran across toward the promontory, lying among loops of small intestines. About an inch from the tip, in a small dilatation, lay a hard smooth mass, the size and shape of a prune stone, for which it was taken until cut out. It was made up of a dry fecal matter, with a thin, moist, pale yellow coating, and a hard center, resembling a grain of sand.

In one case a mucous plug was found. This was in the body of a negro woman of about twenty years, (Case 69.) The patient died suddenly soon after admission to the hospital. There was general anasarca. The only history obtainable was that the patient had been in the same condition for some months. The cause of death was contracted kidney of severe degree.

The appendix was three inches long, lying curled below the cæcum. The intestines showed no lesion. The appendix was filled by a mass of greenish yellow, tough, gum-like material, resembling to the naked eye and microscopically some kinds of casts passed in membranous enteritis. It was so closely impacted that a probe could not be passed through between the mass and the mucous membrane. In the beginning of the appendix, the mucous membrane showed no naked eye change. Towards the tip it was dense and white.

Sections showed: Thickening of the peritoneum of the appendix and its mesentery with fibroid thickening of the mesenteric arteries (adventitia). The muscularis was but little altered, the submucous coat fibroid, and closely united with the fibroid muscularis muscosæ. The tubules of the mucous membrane were not more than half the usual depth, and separated by wide spaces filled with small-celled or fibrous granulation tissue. The epithelial cells appeared mostly as goblet cells. The mass filling the lumen of the appendix was continuous with the colloid contents of the tubules. The process was more marked at the distal end.

Here the plug of altered mucous was precisely like the harder "casts" passed in cases of membranous enteritis. It might be supposed that the plug was the cause of the disease in the appendix. It is more likely, however, that the latter represented the later stages of a severe appendicitis, and that the mucous remaining in the lumen, on account of the rigidity of the walls, became altered in its consistency and appearance. The appendix was probably no longer dangerous, but we can hardly doubt that its possessor had passed through a dangerous condition at some former period.

(To be continued)

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MICHIGAN PHYSICIANS IN MILITARY SERVICE

The following list of physicians has been compiled from reports received from secretaries of county medical societies in which they gave the names of physicians from their respective counties who were serving with the armed forces of the United States. Reports have not been received from all the counties; some physicians have undoubtedly been called since the report was made by the county society secretary; and many addresses are incomplete. The list, however, is as complete as we can make it at this time and the Executive Office of the State Society solicits the help of anyone who knows of a doctor of medicine who is serving his country in the Army, Navy or Marines whose name is not included or whose address is incorrect.

Allegan—
Lt. H. T. Stuch, M.D., Camp Polk, La.

Alpena-Alcona-Presque Isle—
Capt. J. A. Ramsey, Carlisle Barracks, Pa.

Bay-Arenac-Iosco—
Major G. L. Hagelshaw, Camp Wolters, Texas.
Lt. Col. C. S. Tarter, 107th Medical Regiment, Camp Livingston, La.
Capt. C. W. Reutter, 2nd Squadron-52nd Pursuit Group, Norfolk, Va.
Capt. Horace F. Burton, Chanute Field, Rantoul, Ill.
Lt. H. A. Timreck, Fort Sam Houston, Texas.

Berrien—
Walter M. Bartlett, Lawson General Hospital, Camp Gordon, Ga.
William C. Ellet, U. S. Naval Reserve M.C., San Francisco, Calif.
Richard Crowell, U. S. Naval Reserve M.C., Dearborn, Michigan.

Branch—
H. A. Scovill, Fort Custer, Michigan.
E. M. Chipman, address unknown.
Kenneth L. Olmsted, Camp Robinson, Ark.

Calhoun—
Lt. Commander M. J. Capron, Parris Island, S. C.
Lt. (Sr. Grade) Arthur Humphrey, Parris Island, S. C.
Lt. (Sr. Grade) Kenneth Lowe, Parris Island, S. C.
Lt. (J.G.) George W. Slagle, Parris Island, S. C.
Lt. (J.G.) Karl Zinn, Camp Grant, Ill.
Major W. R. Chynoweth, Fort Sam Houston, Texas.
Major Hugh Mullenmeister, APO No. 810, New York City.
Capt. Harvey Hansen, Fort Benning, Ga.
Lt. Joseph Levy, Fort Mead, Maryland.
Lt. James Forsythe, Kelly Field, Texas.
Lt. C. E. Hale, Fort Sam Houston, Texas.
Lt. Clark W. Royer, Camp Wolters, Texas.
Capt. T. C. Smith, Canadian Army, Ontario.
Lt. Harold Tannenholz, Camp Grant, Ill.
Lt. A. W. Hoyt, Fort Leonard Wood, Mo.
Lt. Francis L. Lam, Camp Forrest, Tenn.
Lt. Sam Alpiner, Fort Custer, Michigan.
Lt. Gordon A. Prachar, address not given
Lt. Everal Wakeman, address not given.
Lt. Harold Peggs, address not given.
Lt. Meyer Penzlar, address not given.
Lt. Charles Stewart, Jr., address not given.
Lt. W. H. Schick—killed in action at Pearl Harbor.

Dickinson-Iron—
Lt. Kenneth E. Gloss, San Angelo, Texas.
Lt. Harry H. Haight, M.C., U. S. Marine Corps, Pearl Harbor, T.H.

Eaton—
Lt. Arthur S. Gray, Kalamazoo Induction Center, Kalamazoo, Michigan.

Genesee—
Lt. Commander Robert F. Hague, U. S. Ships Service, Dearborn, Michigan.
Capt. Maynard M. Farhat, Camp Davis, N. C.
Lt. Henry K. Baker, Camp Grant, Illinois.

Grand Traverse-Leelanau-Benzie—
Joseph Knapp, M.D., Camp Croft, S. C.
Earl E. Hamilton, M.D., address unknown.
Richard Greer, M.D., Northport (home address).

Hillsdale—
Clair E. Johnson, Camp Grant, Ill.
Robert Kinzel, address unknown.

Houghton-Baraga-Keweenaw—
Lt. James Acocks, Langley Field, Va.
Maurice Kadin, Camp Grant, Ill.
Lt. Colonel T. P. Vander Zalm, Fort Leonard Wood, Missouri.

Ingham—
Capt. Thomas E. Gibson, Selfridge Field, Mich.
Capt. John Wellman, Lawson General Hospital, Ga.
K. W. Toothaker, Great Lakes Naval Training Station, Ill.

Ionia-Montcalm—
I. V. LaVictoire, U. S. Naval Hospital, Canacao, Philippine Islands.

Jackson—
Francis W. Bartholic, Camp Forrest, Tenn.

Kalamazoo—
Capt. Keith Bennett, Fort Custer, Mich.
Capt. W. B. Crane, Fort Custer, Mich.
Lt. E. R. Nell, Fort Wm. McKinley, Philippine Islands.
Lt. C. E. Osborne, Fort Statsenburg, Philippine Islands.
Capt. E. H. Wagenaar, Fort Benjamin Harrison, Ind.
Lt. Chas. H. McIntyre, U. S. Navy M.C., Detroit.

Kent—
Frank Adams, c/o Postmaster, New York City.
John Boet, Camp Livingston, La.
Charles Farber, Kalamazoo Induction Station, Mich.
Charles Frantz, Camp Livingston, La.
Robert Freyling, U.S.S. Nevada, San Pedro, Calif.
Lawrence Hilt, Naval Hospital, Great Lakes, Ill.
Robert Kelly, Panama Canal Zone.
John Lavan, U. S. Navy, address unknown.
M. M. Marrin, Fort Bliss, Texas.
Stanley Moleski, U. S. Navy, Great Lakes, Ill.
John M. M. Whalen, Pearl Harbor, T.H.
John F. Wurz, Camp Livingston, La.

(Continued on Page 274)

Portrait of a Healthy Baby - 1890

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William S. Baker, Lt. j. g. At Sea.
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Angus G. Goetz, Lt. Comm., 9th Naval District, Great Lakes, Ill.
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INJUSTICE TO THE MEDICAL OFFICER

In recruiting an army from civil life the most important factor is the physician, on whose judgment the personnel is selected, and by whose attentions they are retained in service. Many of these medical men abandon established practice to serve their country for the minimum salary of the lieutenant grade. Since most of them are below middle age, they have not yet acquired a competence, and support of their families depends upon the army salaries.

Frequently, dissatisfaction is expressed by these army surgeons because they have not received advancement which they had reason to anticipate, while officers of the line are more rapidly advanced to the grade of captain and major, with the accompanying increase of salary which is necessary to maintain their families. It is stated that an attorney, when entering legal army service in the Judge Advocate department, is at once given the grade of captain. Which is the more essential for army welfare, preservation of the soldier's health or attention to his legal status? No officer from civil life enters upon army service so well equipped to function immediately in the duties of his office as the medical man, since his army professional requirements are substantially the same as those he has been exercising in civil life. Therefore, it would seem that above all officers he should be entitled to promotion with as much speed as is consistent with army regulations.

Yet discontent is generated among medical officers by reason of long retention in the grade of lieutenant, with insufficient income to maintain their families at home, often necessitating curtailments which it seems unjust to demand of them. It is reported that at times a doctor has sought retirement in order to return to private practice and relieve the hardship entailed on his family but the increased demand for army medical men has required his retention in service.

In view of the great increase in the army, which is inevitable as the result of participation in active warfare, an incessant demand will be made for more doctors who will be expected to enlist to serve their country. They will respond in adequate numbers as they have always done when summoned by the call of duty. Since a successful, efficient army depends upon satisfaction of its personnel, it would appear that attention might wisely be directed to the adjustment of this salary injustice, of which medical officers are complaining.—*Northwest Medicine,* January, 1942.

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** *Laryngoscope, Feb. 1935, Vol. XLV, No. 2, 149-154.*

READERS' SERVICE

TREATMENT OF SHOCK FROM WAR INJURIES

This paper emphasizes four aspects of the treatment of shock that have an especial application to war injuries: (1) Use of oxygen therapy, (2) Use of adrenal cortical hormone therapy, (3) Use of certain of the newer blood substitutes, and (4) Special advances in the treatment of burn shock. Emphasis is placed on the intravenous use of one per cent pectin solution as a blood substitute. This substance was first used for shock by F. W. Hartman in collaboration with the author and has the advantages of cheapness, availability, and ease of sterilization and preservation. In the treatment of burn shock blood plasma has especial indications. For simplicity in calculating the plasma dosage, Harkins' formula is adopted, namely to *give 100 c.c. of plasma for every point the hematocrit exceeds the normal of 45.* For children a proportionately smaller dose is indicated.—HENRY N. HARKINS, M.D., Detroit, Michigan. (See page 287.)

THE VALUE OF REST IN BRONCHIAL ASTHMA

In the therapy of bronchial asthma today, sufficient emphasis has not been placed upon the importance of non-allergic measures, such as rest. Ordinarily where rest is employed it is often self-imposed by the patient and is of short duration. Therefore, its many advantages are overlooked by patient and physician. Prolonged bed rest is indicated in those cases in which their asthma has become chronic, in those with complications of marked emphysema and cardiac impairment, and in those who present multiple allergies.

Prolonged bed rest is indicated in all patients who have not benefited from conventional allergic therapy. An analysis of fifteen patients with bronchial asthma who had failed to respond satisfactorily to usual anti-asthmatic measures reveals definite improvement in nine cases, or 60 per cent, who had received prolonged bed rest.—BARNEY A. CREDILLE, M.D., Flint, Michigan. (See page 293.)

THE RELATIONSHIP OF RETICULO-ENDOTHELIAL SYSTEM TO CELLULAR AND HUMORAL IMMUNITY

The reticulo-endothelial system of highly phagocytic cells performs certain vital physiologic protective and conservational functions, including the phagocytosis of senile or damaged blood cells, bacteria and foreign debris. Under certain hereditary and environmental circumstances, however, the phagocytic activity of these cells may become accentuated to the point of producing several distinctive disease syndromes, important to distinguish from somewhat similar syndromes, depending upon a primary bone marrow pathology.

Congenital hemolytic icterus, essential thrombocytopenic purpura and primary splenic granulopenia are examples of red blood cell, blood platelet or neutrophilic granulocyte deficits in the peripheral blood, which may be promptly and permanently corrected by successful splenectomy.

Recent fundamental studies, in vivo and in vitro, of these same reticulo-endothelial cells attribute the origin of normal plasma globulins to these units. Furthermore, using marked "dye antigens," these phagocytic cells have been demonstrated to engulf and break down this material with subsequent fragmentation of the cytoplasm, coincident with the appearance of the first demonstrable specific antibodies in the culture medium.—CHARLES A. DOAN, M.D., Columbus, Ohio. (See page 295.)

SOME USES OF CHEMOTHERAPY IN OPHTHALMOLOGY

Sulfanilamide, sulfapyridine, sulfathiazole and sulfadiazine have a demonstrated clinical value. These substances call for an expanding use by the ophthalmologist. It is important to remember that other established therapeutic agencies need not be discarded nor neglected with the use of the substances above. Also, some patients are hypersensitive to the compounds named above and require other forms of treatment.—PARKER HEATH, M.D., Detroit, Michigan. (See page 303.)

RECENT ADVANCES OF CHEMOTHERAPY IN INFECTIOUS DISEASES

In World War I, 37 per cent of the men killed in action died of diseases which are now amenable to treatment with the sulfonamide drugs. There are reasons for hoping that if the same conditions should obtain in the present war, at least 15 per cent of the total deaths from all causes, or about one-quarter of those who are not killed in action, may be avoided by the use of sulfonamides alone. In some diseases the results will be even better.

In addition to saving lives, the sulfonamides greatly reduce the amount of time lost from sickness. They also prevent wound and other infections when used early. The death rate from spi-

(Continued on Page 282)

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A BORDEN PRESCRIPTION PRODUCT

nal meningitis, pneumonia, wound infections, and dysentery is now less than at any other time in the history of these diseases. Also the time lost from sickness is greatly shortened.

New drugs are now being developed every year and rapid advances are being made. During the past year alone, two new drugs have been introduced—sulfadiazine and sulfaguanidine. The choice of various sulfonamides in the treatment of infections is discussed in the paper.—CHESTER S. KEEFER, M.D., Boston, Massachusetts. (See page 305.)

ARTHRITIS—A CURABLE DISEASE?

The adage "Once an arthritic, always an arthritic" is believed to be a generalization not entirely accurate. Thus arthritis associated with specific infection, such as gonorrhea, responds readily to sulfonamide chemotherapy, and gout in its acute form is readily controlled by modern therapy.

The curability of rheumatoid arthritis has been long debated. Cecil feels that many factors enter into the outcome, such as age, temperament, constitution of the patient, et cetera. Of drugs, gold salts are the best single agent available. In a group of 235 patients treated with gold, 31 per cent had complete remissions and 35 per cent were greatly improved. However, relapses are prone to occur, and the toxic reactions which frequently follow gold therapy render it a dangerous agent in the hands of the inexperienced.

The symptoms of osteoarthritis can often be relieved by one of several methods among which are rest, iodides, and physical therapy. On the whole it is felt that the outlook in arthritis is brighter than formerly, and that we can look for still more progress.—By RUSSELL L. CECIL, M.D., New York City. (See page 311.)

MEDICAL SERVICE IN SMALL INDUSTRIES

The majority of workers are employed in small plants and 97 per cent of these employ fewer than 250 men. A program for providing adequate medical and health service for the small industry is, therefore, essential. The loss in working days due to non-occupational illness is much greater than that for occupational diseases and the resulting wastage is enormous. Medical service for small industries will necessarily devolve upon local physicians. Medical associations are aware of this responsibility and opportunity of the medical profession to serve small industries on a part time basis. If only a small reduction can be made in absenteeism, it will accomplish an economic saving of inestimable value to American industry at the present time.—A. J. LANZA, M.D., New York City. (See page 315.)

SYPHILIS DISCOVERED DURING INDUSTRIAL EXAMINATIONS

Report of the MSMS Syphilis Control Committee

The Industrial Health Committee and the Syphilis Control Committee of the Michigan State Medical Society have formulated the following general policies for handling cases of Syphilis discovered during the routine industrial physical examinations.

These recommendations have been submitted to The Council of the MSMS and have been adopted as the policy of the Michigan State Medical Society:

1. Kahn reports to be in separate locked file open only to the plant physician.

2. Information from the examining physician as to Syphilis given to the personnel department shall be *statistical only*. No names or specific cases to be discussed with officers or personnel department.

3. All full time and part time industrial physicians to send employes to their family physician with the report of the positive serologic test.

4. The physicians accepting these cases must assume responsibility for clinical and serologic check up to establish or disprove the diagnosis; and to carry out at least a minimum standard course of treatment for reasonable protection of patient, fellow employes and employer.

In the Program for Syphilis Control published in THE JOURNAL MSMS, December, 1937, pages 979-982, will be found the following recommended standard of treatment which the Syphilis Control Committee again recommends:

Week	*Treatment*
1- 4	Bismuth 1 c.c. intramuscularly at weekly intervals and potassium iodide 10 to 30 gr., T.i.d., p.c. by mouth.
5-12	Eight weekly doses Neo. 0.45-0.6 gm. or mapharsen, .04-.06 gm. (first dose, one-half full dose).
13-22	Eight weekly doses bismuth and iodides, as before.
23-30	Eight weekly doses neo-arsphenamine or mapharsen.
31-40	Ten weekly doses bismuth and iodides.
41-48	Eight weekly doses neo-arsphenamine or mapharsen.
49-60	Twelve weekly doses bismuth and iodides.
61-72	Rest period.
73-84	Twelve weekly doses of bismuth and iodides.
85-96	Rest period.
97-108	Twelve weekly doses bismuth and iodides.